stationary IR•

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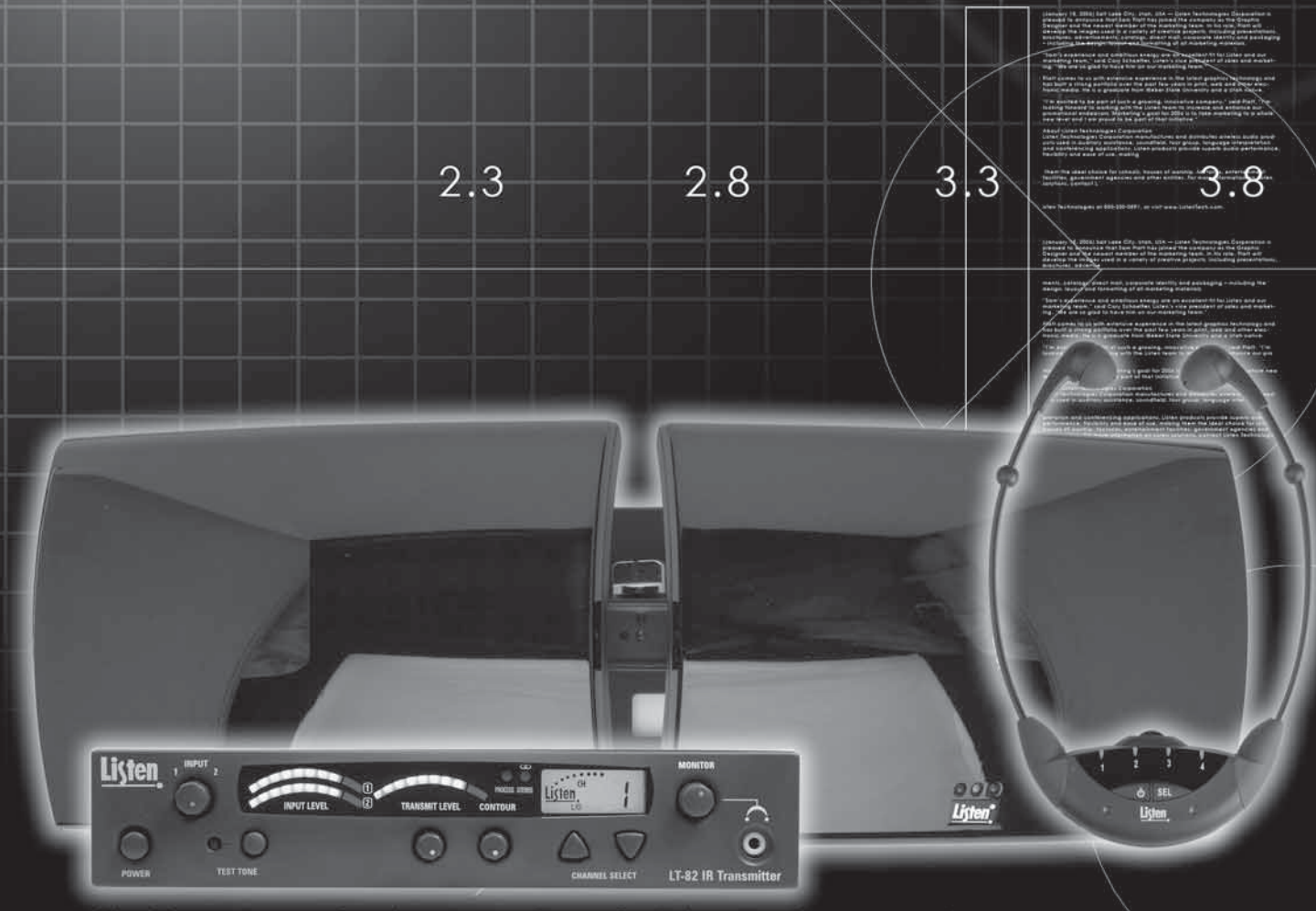

Stationary IR System Design Guide and Manual

Listen®

www.listentech.com

INFRARED TECHNOLOGY

Dear Valued Customer,

Thank you for choosing Listen! All of us at Listen are dedicated to provide you with the highest quality products available. We take great pride in their outstanding performance because we care that you are completely satisfied. That's why we independently certify them to the highest quality standards and back them with a limited lifetime guarantee. We stand ready to answer any questions you might have during installation or in the operation of our products. Should you experience any problems whatsoever with your Listen products, we are ready to help you in any way we can with prompt, efficient customer care. Because at Listen, it's all about you! And should you have any comments on how we might improve our products or our service, we're here to listen.

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800.330.0891 North America
801.233.8995 Fax
support@listentech.com
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Thank you and enjoy your listening experience!

Best regards,
Russell Gentner and the Listen Team

- In the few instances where repairs were needed, 99% of all clients indicated that they were happy with repair turn-around-times and 85% of the time, clients were without their product for less than 10 days!
- Overall client satisfaction of working with Listen was rated 4.8 out of 5.
- "Please continue with your excellent attitude toward customer satisfaction. You guys are great!"
- "I've never had such good service from any company. Keep up the good work!"
- "You stand behind your product wonderfully."

Stationary Infrared Table of Contents

Design Guide
- Infrared Technology Overview 5
- System Overview 6
- Designing a System 9
- Design Tools 21

LT-82 Stationary IR Transmitter
- Specifications 35
- Block Diagram 36
- Quick Reference Page 37
- Setup and Operating Instructions 38
- Accessories for LT-82 43

LA-140 IR Radiator
- Specifications 53
- Quick Reference Page 54
- Setup Instructions 55
- LED Indications 57
- Mounting your Radiator 58
- Accessories for LA-140 78

LR-42/LR-44 4-Channel IR Receivers
- Specifications 87
- LR-42 Quick Reference Page 89
- LR-44 Quick Reference Page 90
- Setup Instructions 91
- Operating Instructions 95
- Locking Instructions 101
- Programming Instructions 102
- Programming Examples 107
- Programmable Features Detailed Descriptions 110
- Battery Charging Information 111
- Accessories for LR-42/LR-44 115

LA-350/LA-351 8-Unit IR Receiver Storage/Charging Cases
- LA-350 Specifications and Features 123
- LA-351 Specifications and Feature 124
- LA-350 Charging Requirements/Instructions 125
- Cord Tidy Rack 128

Supplementary Information
- Troubleshooting 137
- Frequently Asked Questions 139
- Compliance Information 141
- Warranty 141
- Contacting Listen 141

stationary IR•

2.3 2.8 3.3 3.8

DESIGN GUIDE

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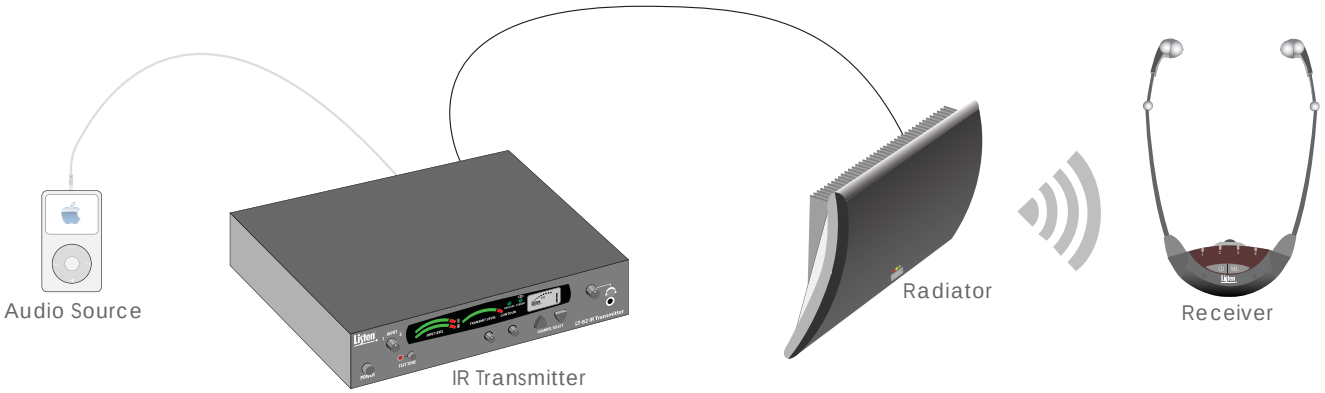
INFRARED TECHNOLOGY

Stationary Infrared Design Guide Table of Contents

Infrared Technology Overview	5
System Overview	6
Designing a System	9
Design Tools	21

Infrared Technology Overview

Infrared or "IR" technology uses infrared light to transmit audio without wires. This type of transmission is advantageous to RF transmission because it is secure, it is not susceptible to RF interference, and one receiver can be used for multiple rooms within a facility. The transmitter accepts an audio signal and then frequency modulates an RF carrier at 2.3, 2.8, 3.3 and/or 3.8MHz. This carrier along with DC power (to power the radiator) is supplied to the radiator via cables. The carriers are then radiated into the room using IR emitter diodes. This is the same technology used by the remote control of your TV set. A receiver then receives the IR light and demodulates the carrier.



When designing an IR system it is important to keep the following in mind:

- In open space (when there are no reflective surfaces) IR is line of sight. If the receiver cannot "see" light from the radiator, it will not receive the audio signal. It is important to provide sufficient IR coverage within a facility so users will not have drop outs of the IR signal. This design guide will help you do this.

- In facilities that have reflective and lighter colored surfaces, the IR light will be reflected and you can achieve greater coverage. For example, when emitting in a very large room (like an exhibit hall) you will notice that you need to point the receiver directly at the radiator to pick up the signal. However, when the radiator is placed in a smaller room (for example 25ft./7.7M square) with white walls you will experience much better coverage. This is because the IR signal is being reflected in many different directions, increasing coverage.

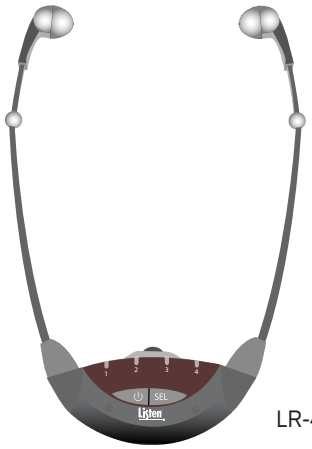
- Listen systems uses higher modulation frequencies that make the system less susceptible to light interference from fluorescent lights and other sources. However, the system is not immune from interference from sources that create IR light such as sunlight and plasma displays.

- Listen products are compatible with other manufacturers who use the same modulation frequencies (2.3, 2.8, 3.3, 3.8 MHz).

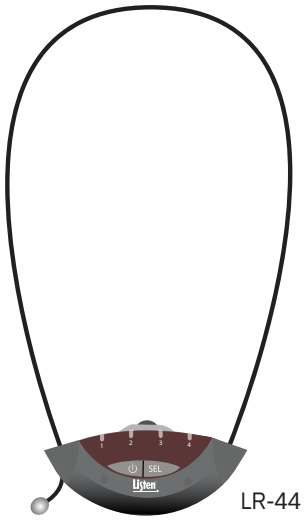
System Overview

There are three main components of any Stationary IR system: the transmitter, radiator (emitter) and receivers.

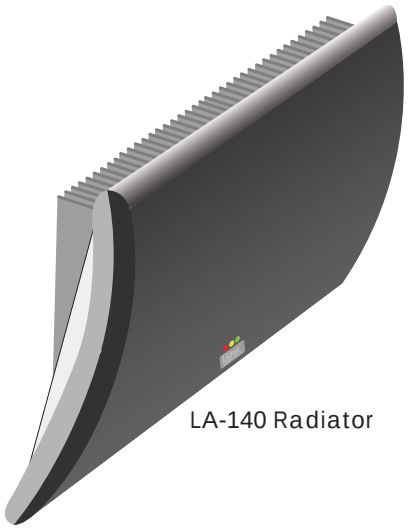
LT-82 Transmitter



LR-42



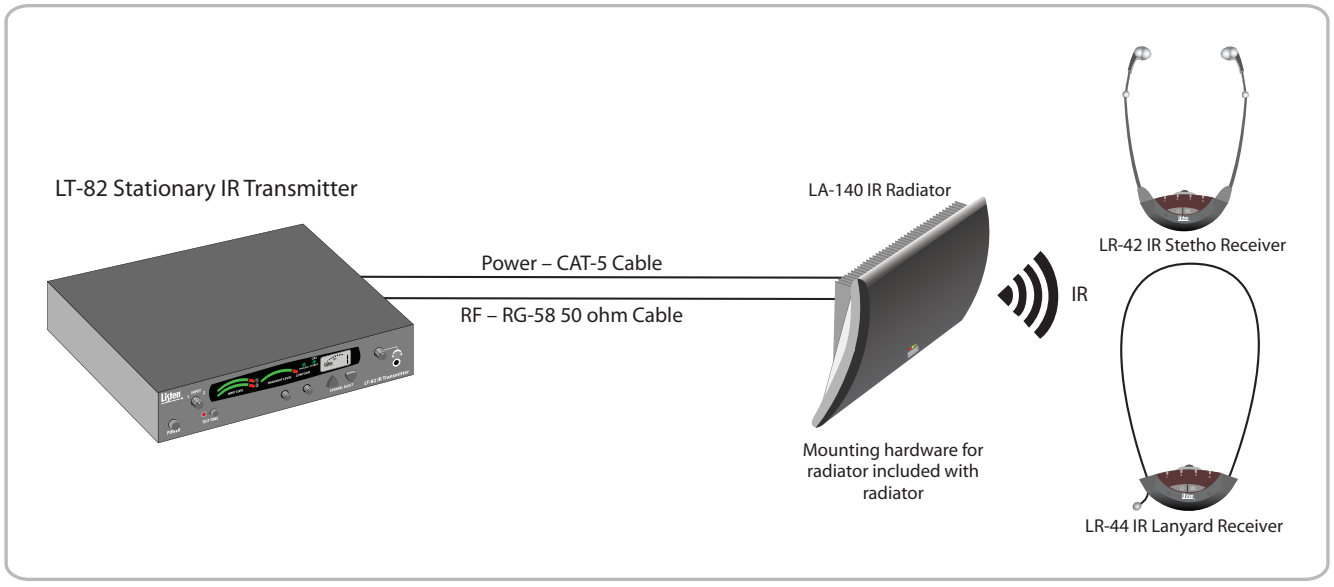
LR-44



LA-140 Radiator

Single Channel System

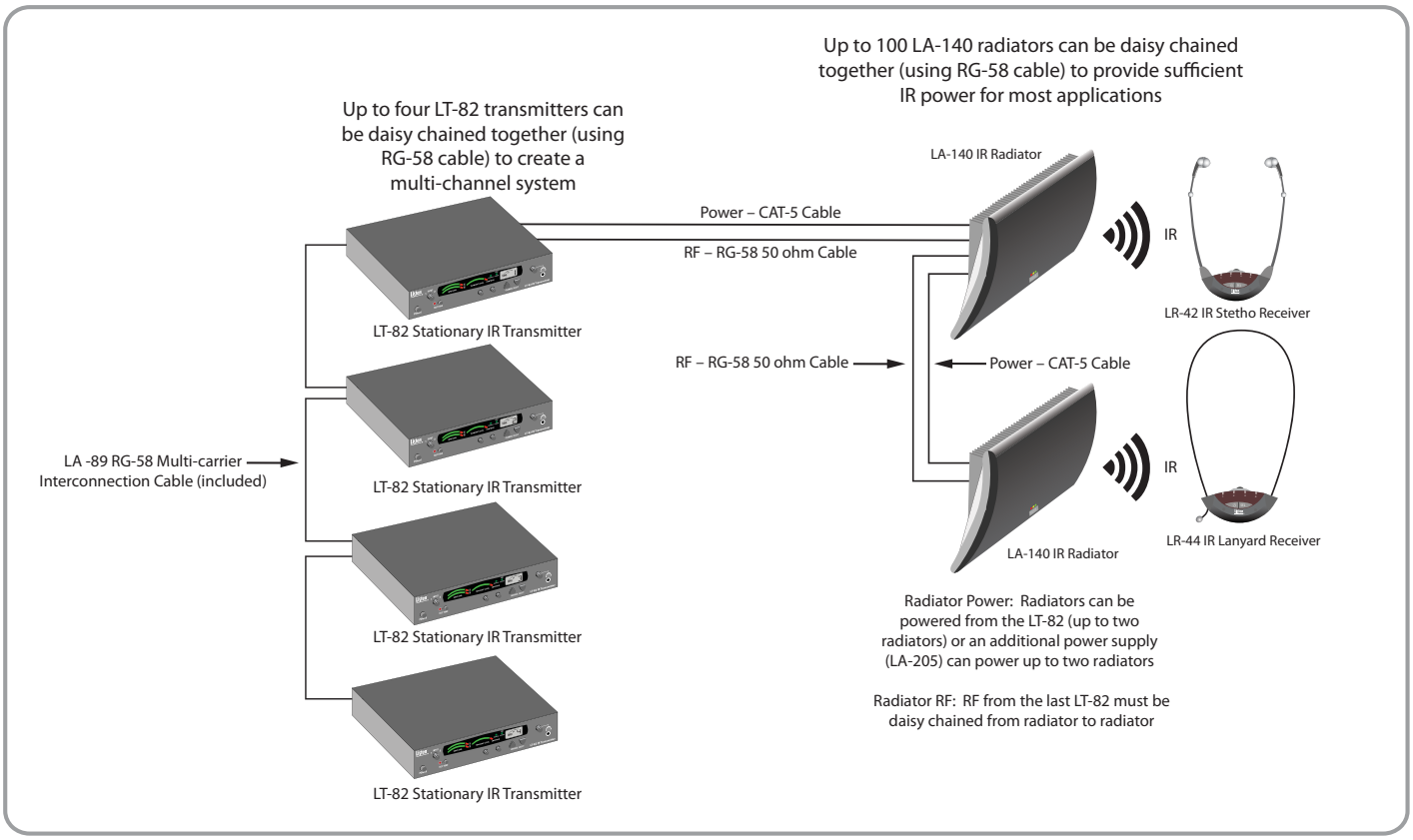
A single channel system consists of one LT-82 transmitter and one or more radiators. The diagram below shows such a system with one radiator. The radiator is powered from the power supply at the transmitter. This power supply can supply enough power for the LT-82 and up to two LA-140 radiators. If you need more than two radiators, you will need more power supplies. This is discussed later in this document. Power is supplied from standard CAT-5 cable while RF from the transmitter is delivered using 50-ohm RG-58 coaxial cable. The radiator is supplied with 25 feet (7.6 meters) of CAT-5 and RG-58 coaxial cable.


LT-82 Stationary IR Transmitter
Power – CAT-5 Cable
RF – RG-58 50 ohm Cable
LA-140 IR Radiator
Mounting hardware for radiator included with radiator
IR
LR-42 IR Stetho Receiver
LR-44 IR Lanyard Receiver

System Overview

Multiple Channel System

A multiple channel system consists of two to four LT-82 transmitters and one or more radiators. The diagram below shows such a system with two radiators. The radiators are powered from the power supply from the first transmitter. This power supply can supply enough power for the LT-82 and two LA-140 radiators. If you need more than two radiators, you can use the power from the other transmitters. In this example, the four transmitter power supplies can supply enough power for up to eight LA-140 radiators. This is discussed later in this document. Power is supplied from standard CAT-5 cable while RF from the transmitter is delivered using 50-ohm RG-58 coaxial cable. Each radiator is supplied with 25 feet (7.6 meters) of CAT-5 and RG-58 coaxial cable.


Up to 100 LA-140 radiators can be daisy chained together (using RG-58 cable) to provide sufficient IR power for most applications
Up to four LT-82 transmitters can be daisy chained together (using RG-58 cable) to create a multi-channel system
LA-140 IR Radiator
Power – CAT-5 Cable
RF – RG-58 50 ohm Cable
IR
LR-42 IR Stetho Receiver
LT-82 Stationary IR Transmitter
RF – RG-58 50 ohm Cable
Power – CAT-5 Cable
LA -89 RG-58 Multi-carrier Interconnection Cable (included)
LT-82 Stationary IR Transmitter
IR
LR-44 IR Lanyard Receiver
LT-82 Stationary IR Transmitter
LA-140 IR Radiator
LT-82 Stationary IR Transmitter
Radiator Power: Radiators can be powered from the LT-82 (up to two radiators) or an additional power supply (LA-205) can power up to two radiators
Radiator RF: RF from the last LT-82 must be daisy chained from radiator to radiator

System Overview

Key Concepts of Designing a Stationary IR System

1 Each LT-82 transmitter used can power two LA-140 radiators

Each LT-82 transmitter used can power up to two LA-140 radiators. If you design a system that requires more radiators than the transmitters can power, you need to order additional LA-205 power supplies. Each LA-205 can power up to two LA-140 Radiators.

2 Up to four LT-82 transmitters can be interconnected to create up to a four channel system

Up to four LT-82 transmitters can be interconnected to create up to a four channel system. For the system, there are two RF outputs provided for connection to the radiators. Each of these two outputs is referred to as the "Radiator Daisy Chain." RG-58 coaxial cable is used to interconnect the RF in the radiator daisy chain. You can connect as many radiators in the daisy chain as you need.

Note: Adding additional transmitters will decrease radiator coverage.

3 Each radiator requires one RF (RG-58 coax) connection and one power (CAT-5) connection

Each radiator requires one RF (RG-58 coax) connection and one power (CAT-5) connection. The RF connection can come from a transmitter or from another radiator. The power connection can come from either a transmitter, a radiator or from a power supply (as long as you don't exceed the capacity).

4 Listen has provided mounting hardware for most LA-140 mounting situations

To make it easy for you to design, specify and install a system, Listen has provided mounting hardware for most mounting situations including wall, ceiling, corner, desk, tripod and mic stands. To double the radiation power you can vertically or horizontally mount two radiators together using the LA-342 dual radiator mounting brackets. This includes coaxial RF and CAT-5 power cables.

5 It is possible that the RF signal arrives to different radiators at different times

Due to the higher modulation frequencies, it is possible that the RF signal arrives to different radiators at different times. This delay can cause the IR carriers to add "out of phase" and cause the signal to drop out. To solve this problem, Listen has provided a delay compensation adjustment on each radiator. This design guide will help you calculate the setting for this adjustment.

6 As the number of channels increases, the effective radiated coverage declines

As the number of channels increases, the effective radiated coverage declines. For example, a two channel system will have half the coverage of a single channel system. If is important to increase the number of radiators for multiple channel systems.

7 The coverage patterns provide coverage of the system assuming no reflection

The coverage patterns provided by Listen provide coverage of the system assuming no reflection. In addition, the radiator has been under-rated to account for system degradation as the IR emitting LEDs age over time. It is important to design the system based on these coverage patterns and not by trial and error. The reason for this is that the coverage pattern will be stronger when the radiator is new. A system that has adequate coverage today may not have adequate coverage in the future if not designed according to the specified coverage patterns of the radiator.

8 The maximum length of CAT-5 power cable

CAT-5 power cable should never exceed 500 feet from the source power supply.

9 The maximum length of coaxial RF cable

Coaxial RF signal cable should never exceed 500 feet from the source transmitter.

Designing a System

1 Determine the number of audio channels

You will need to order one LT-82 transmitter for each audio channel. The Listen system can deliver up to four audio channels simultaneously.

2 Determine the room size and shape

You should either measure the room or use the architect's plans to obtain this information.

3 Complete the room layout worksheet

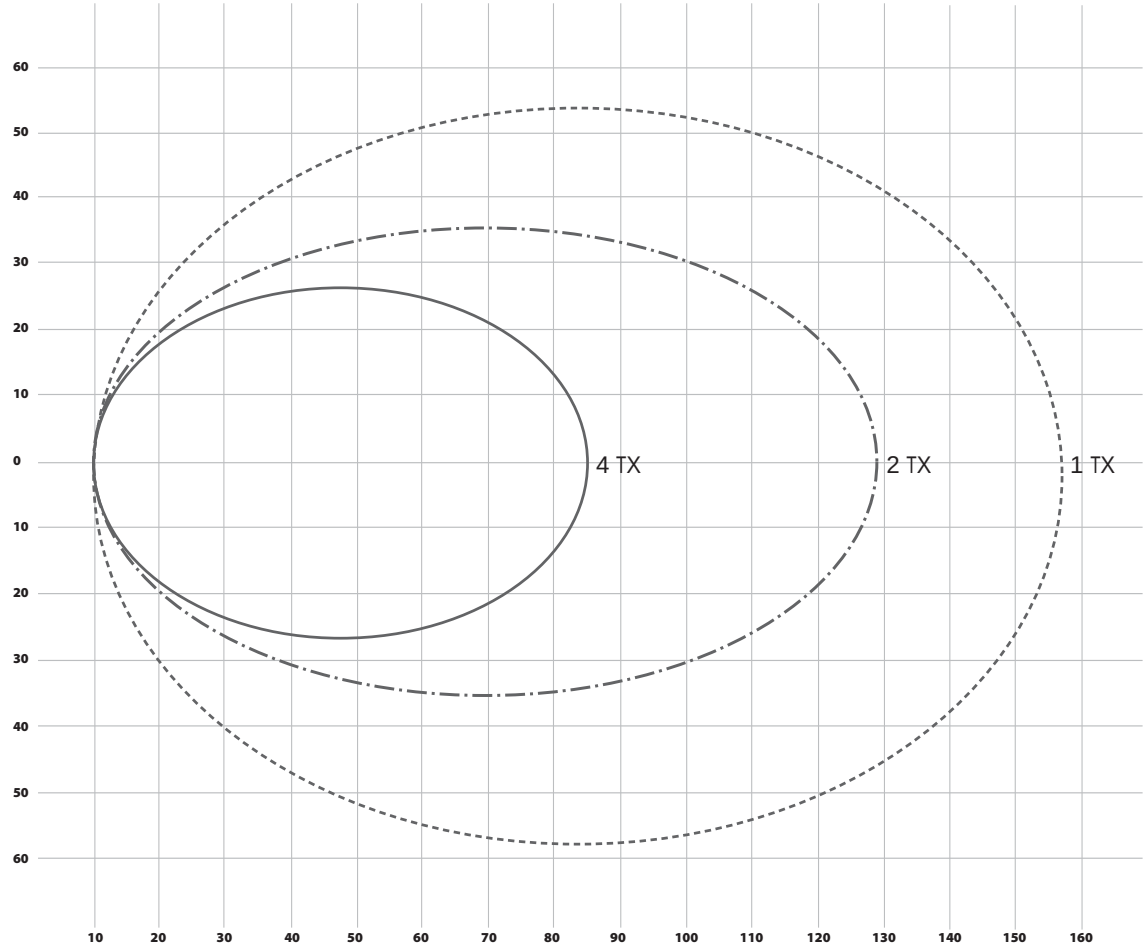
Complete the room layout worksheet found in the final section of this guide placing the location of the transmitters, power supplies and radiators using the worksheet key. The following factors will determine the coverage of the room.

3A Number of radiators and location

Except in small rooms it is recommended that at least two radiators be used to ensure good coverage and minimal shading. Listen radiators (when used with Listen receivers) will cover approximately 10,000 sf (929 sm) for one channel as indicated in the diagram below (note the coverage decreases as the number of channels goes up). For two channels, one radiator will cover 5,000 sf (465 sm) and for four channels, one radiator will cover 2,500 sf (232 sm).

Horizontal Plane Footprint Pattern (feet)

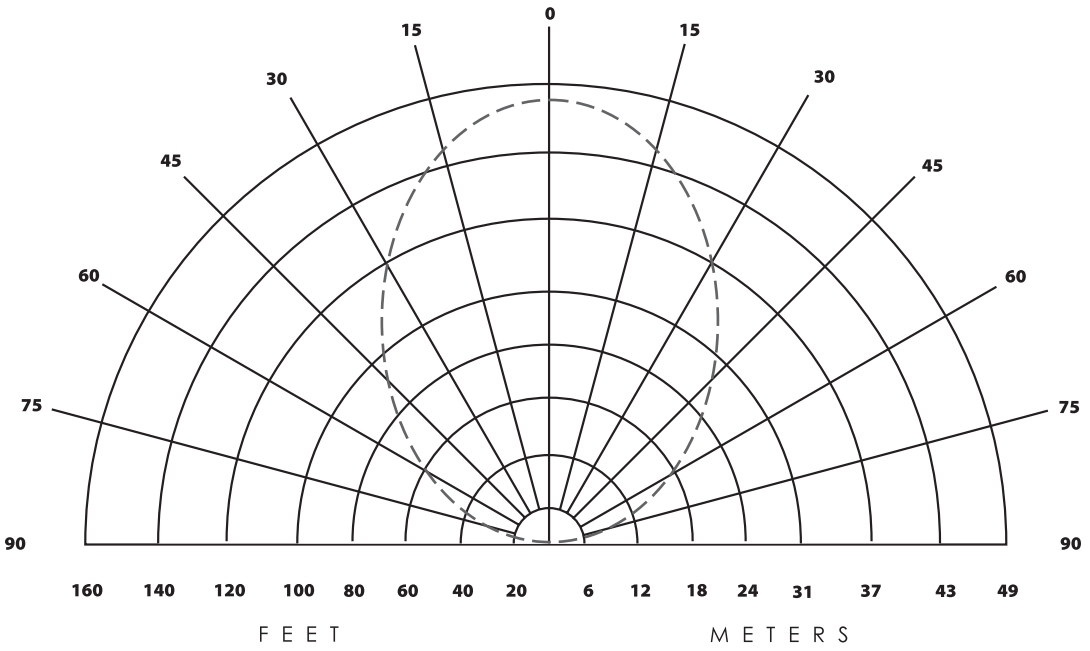
Coverage pattern shown in feet



You should us the above coverage pattern to determine coverage of each radiator in your system, not by trial and error. The radiator will be stronger when new and therefore is under-rated by 40 percent and the coverage pattern above accounts for this. 40 percent degradation will occur after approximately 8,000 operating hours.

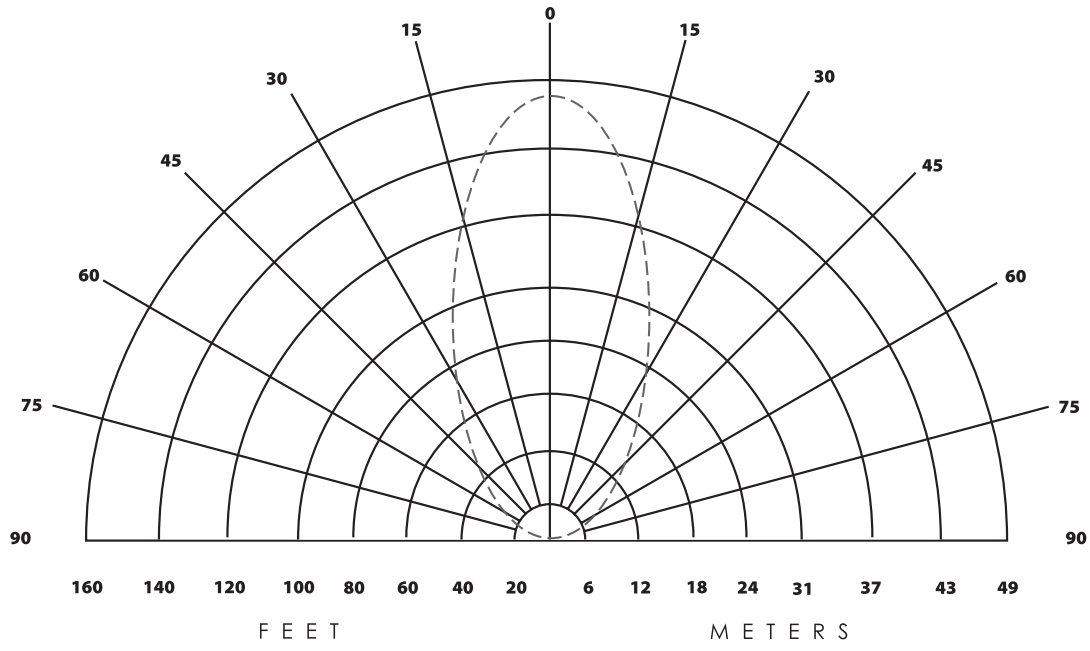
Designing a System

Horizontal Polar Pattern



Single Channel System

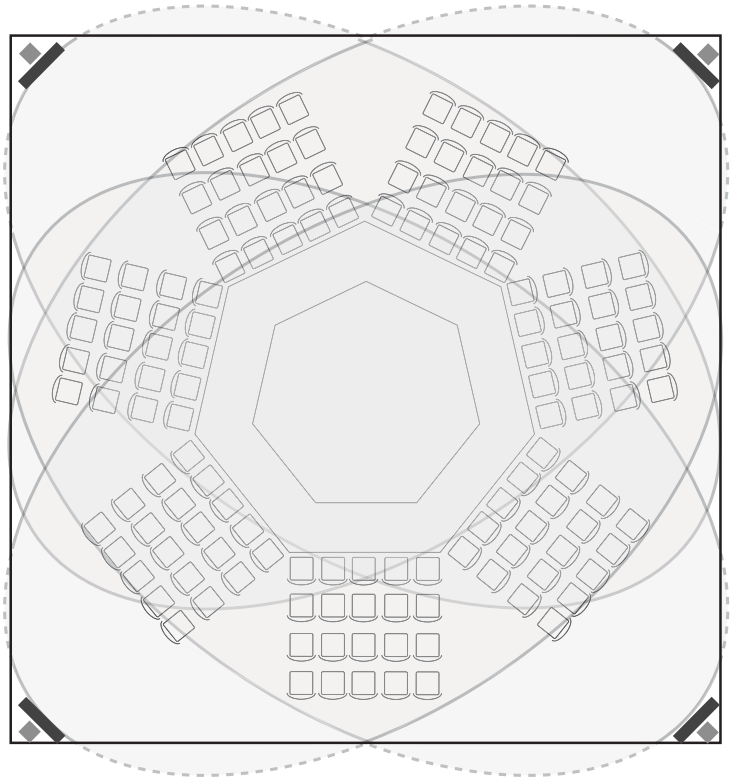
Vertical Polar Pattern



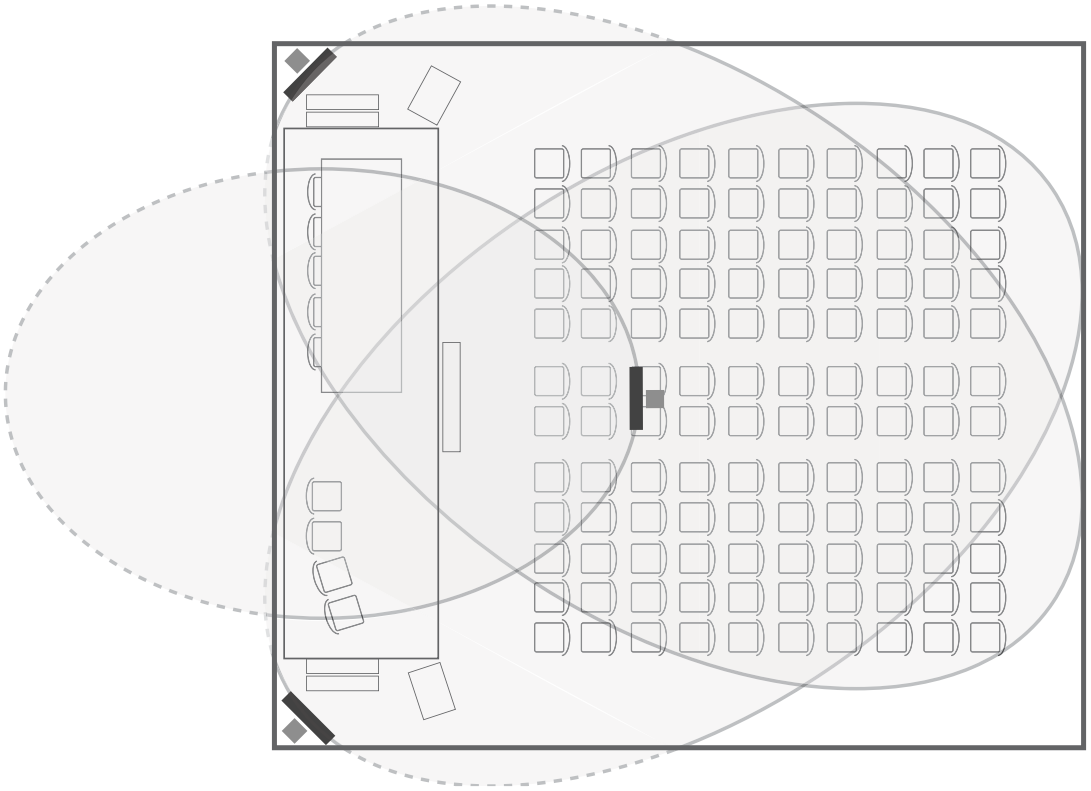
Single Channel System

Designing a System

It is a good idea to provide over-lapping coverage (like in a sprinkling system) of the signal whenever possible to ensure that the signal does not have drop outs. In addition, you should provide special radiator coverage for shaded areas such as under a balcony or in the front of a room where the front mounted radiators do not provide enough coverage.
The following diagrams illustrate these concepts.

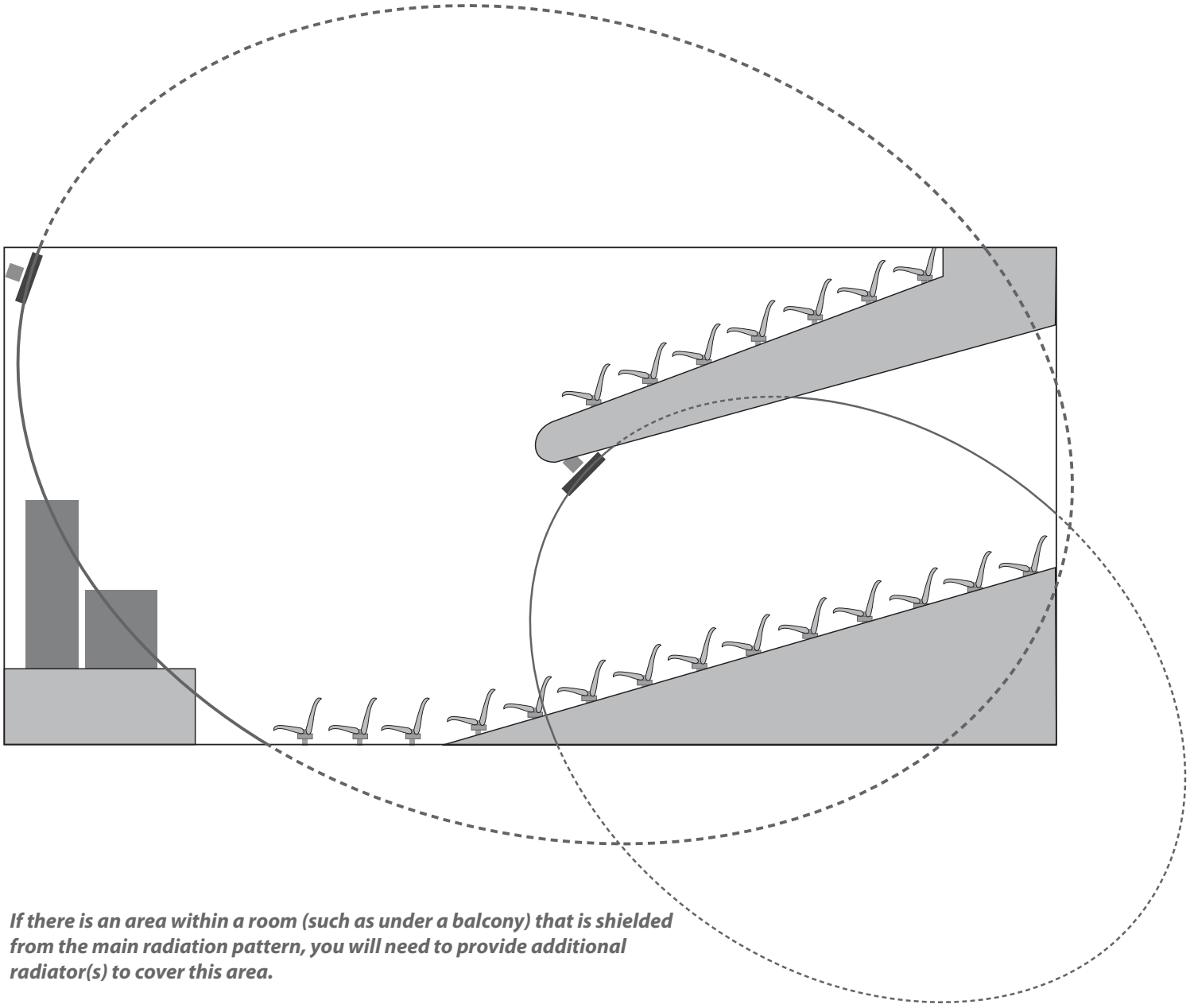


In this example a total of four radiators, one in each corner, ensures good coverage at all locations and orientations.



Except in small rooms, it is recommended that at least two radiators are used to prevent shading of the IR signal.

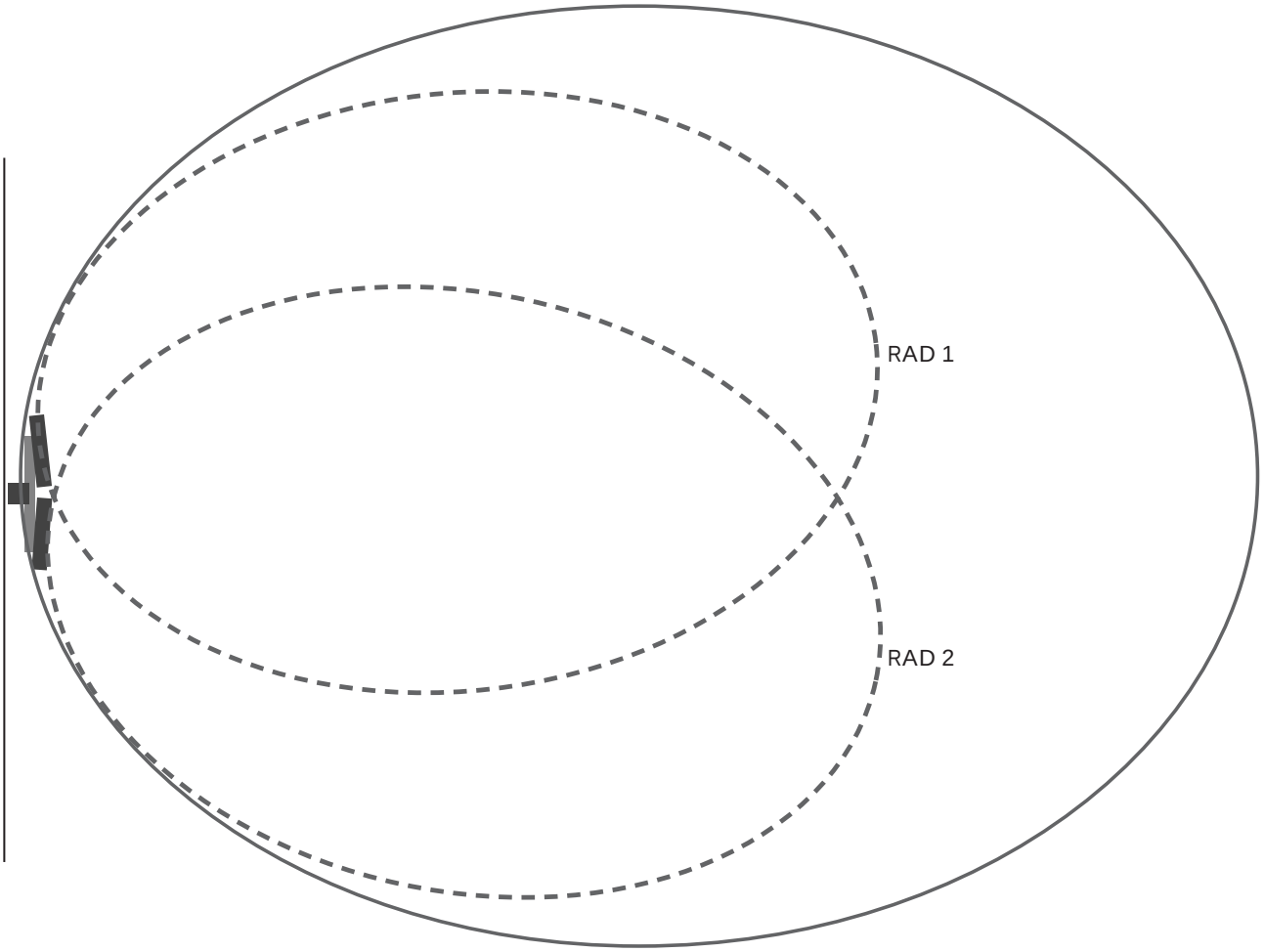
Designing a System



If there is an area within a room (such as under a balcony) that is shielded from the main radiation pattern, you will need to provide additional radiator(s) to cover this area.

Designing a System

To double the radiator power, it is possible to vertically or horizontally mount two radiators together using the LA-342 Dual Radiator Mounting Bracket (sold separately). This is highly recommended in larger rooms.



3B *Height of Radiators*

It is critical to mount the radiators at the proper height. If the radiator is mounted too low, the coverage pattern will be too small to provide sufficient long throw coverage. If the radiator is mounted too high the required angle of the radiator will cause the radiation pattern to be compromised. The best height of the radiator is about 16 feet (5 meters) from the floor.

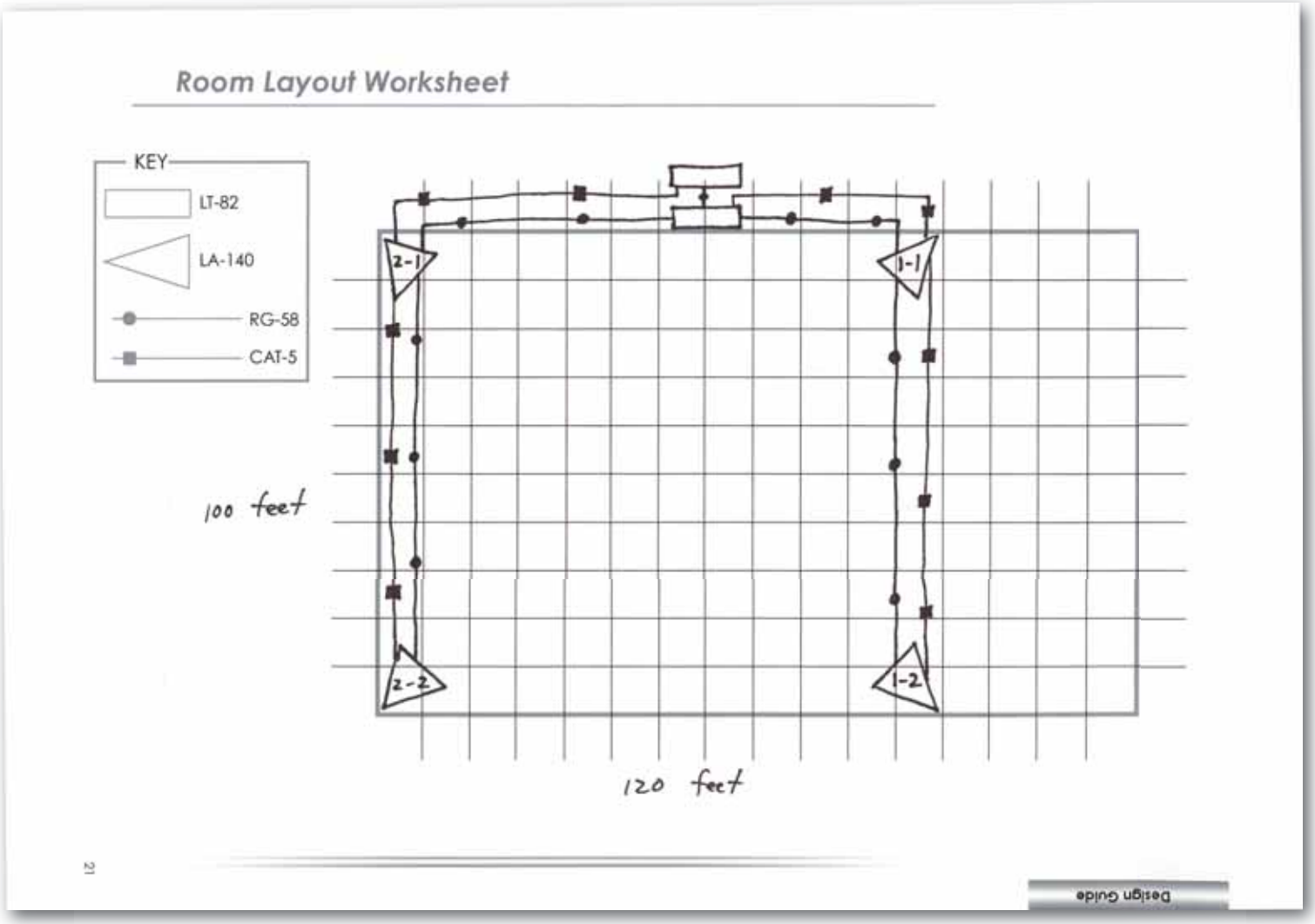
3C *Radiator Mounting Angle*

The mounting system for Listen LA-140 radiators allow you to mount the radiator in 15 degree increments. The best angle depends on the shape of the room and the orientation of the radiator to the seats within the room. In general, mounting angles of 15 and 30 degrees provide the best coverage.

Designing a System

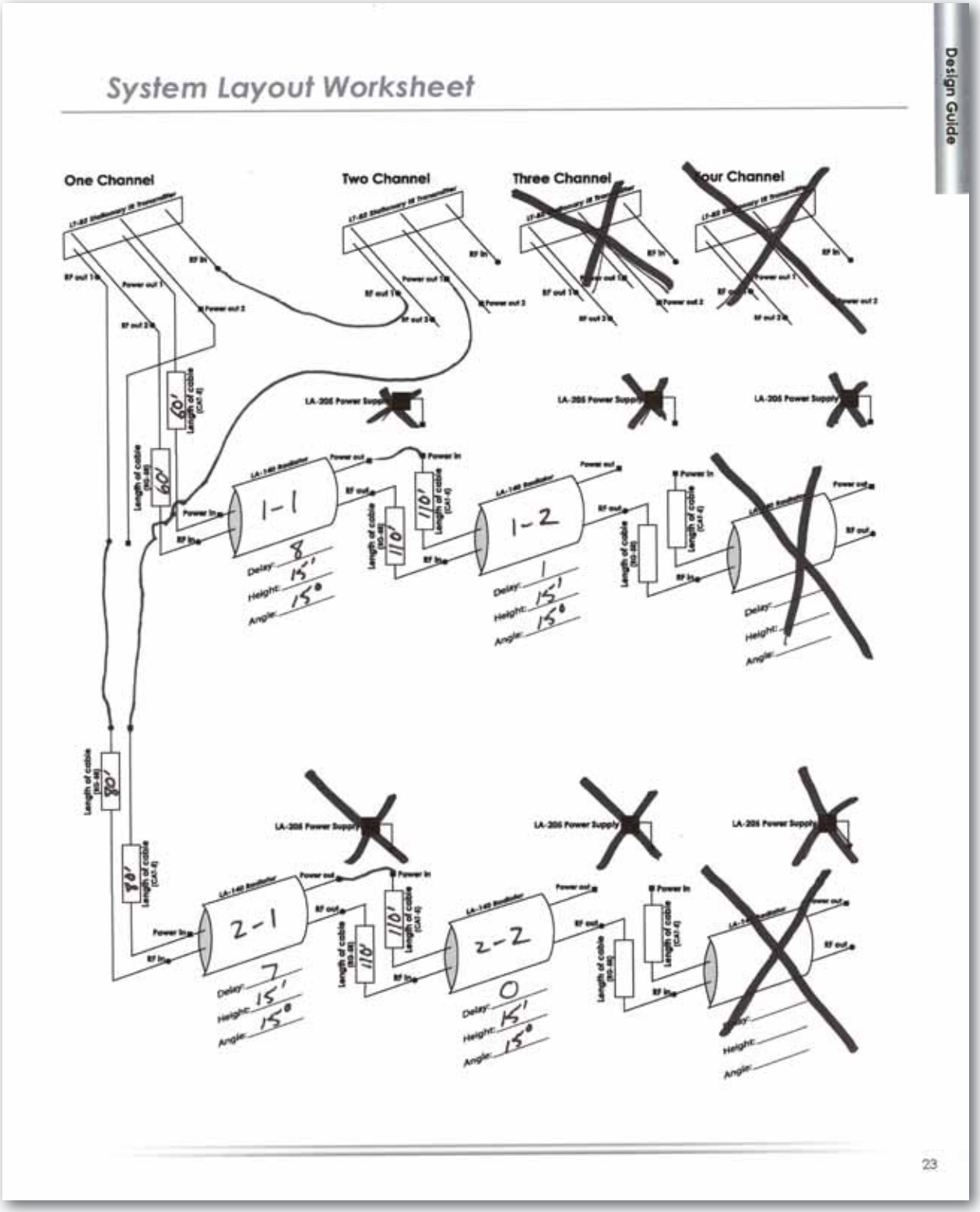
4 Determine the number of radiators required

Determine the number of radiators required based on the size and shape of the room. Based on step two, it is recommended that you draw the room out indicating the location of each radiator in the room and cable runs from the transmitter(s) and power supplies (if any) to the radiator. We have provided the room layout worksheet for you to do this towards the back of this design guide. See example below:



5 Complete the system layout worksheet

Complete the system layout worksheet for Power and RF cable lengths, delay compensation, required number of power supplies, and height and angle of radiators. Refer to the system layout worksheet example below.



Designing a System

5A *Cross out the LT-82 transmitters*

Cross out the LT-82 transmitters not required in your system.

5B *Determine how many radiators will be used*

Determine how many radiators will be used on each radiator daisy chain by reviewing the room layout worksheet. Cross out the unused radiators on the system layout worksheet.

5C *Write in the coaxial RF cable lengths for each radiator*

Write in the coaxial RF cable lengths for each radiator used in the spaces provided. Review your room layout worksheet for this information.

5D *Draw a connecting line from the power supply output*

Draw a connecting line from the power supply output of the LT-82 transmitter(s) and the LA-205 power supplies to each of the radiators. Keep in mind that each transmitter and power supply can power up to two LA-140 radiators.

5E *Cross out the unused power supplies*

Cross out the unused power supplies.

5F *Write in the CAT-5 power supply cable lengths*

Write in the CAT-5 power supply cable lengths for each radiator used in the spaces provided. Review your room layout worksheet for this information.

5G *Determine the delay compensation for each radiator*

Now determine the delay compensation for each radiator using the Delay Compensation Calculator located in the back of this design guide. The correct setting of the delay compensation is necessary only in systems where there is overlap in coverage between two or more radiators. Write the delay setting on the System Layout Worksheet. The delay setting for each radiator is determined using the calculator and as follows:

1 *Distance of Furthest Radiator (DFR)*

Determine which radiator is the furthest from the transmitter on one of the two daisy chains. Calculate the distance from the furthest radiator to the transmitter and record it in the first column of the delay compensation calculator. See example below.

2 *Radiator Distance from Transmitter (RDT)*

For each radiator, determine the overall distance from the transmitter to the radiator. Record the value of each radiator in the RDT column. See example below.

3 *Cable Delay (CD)*

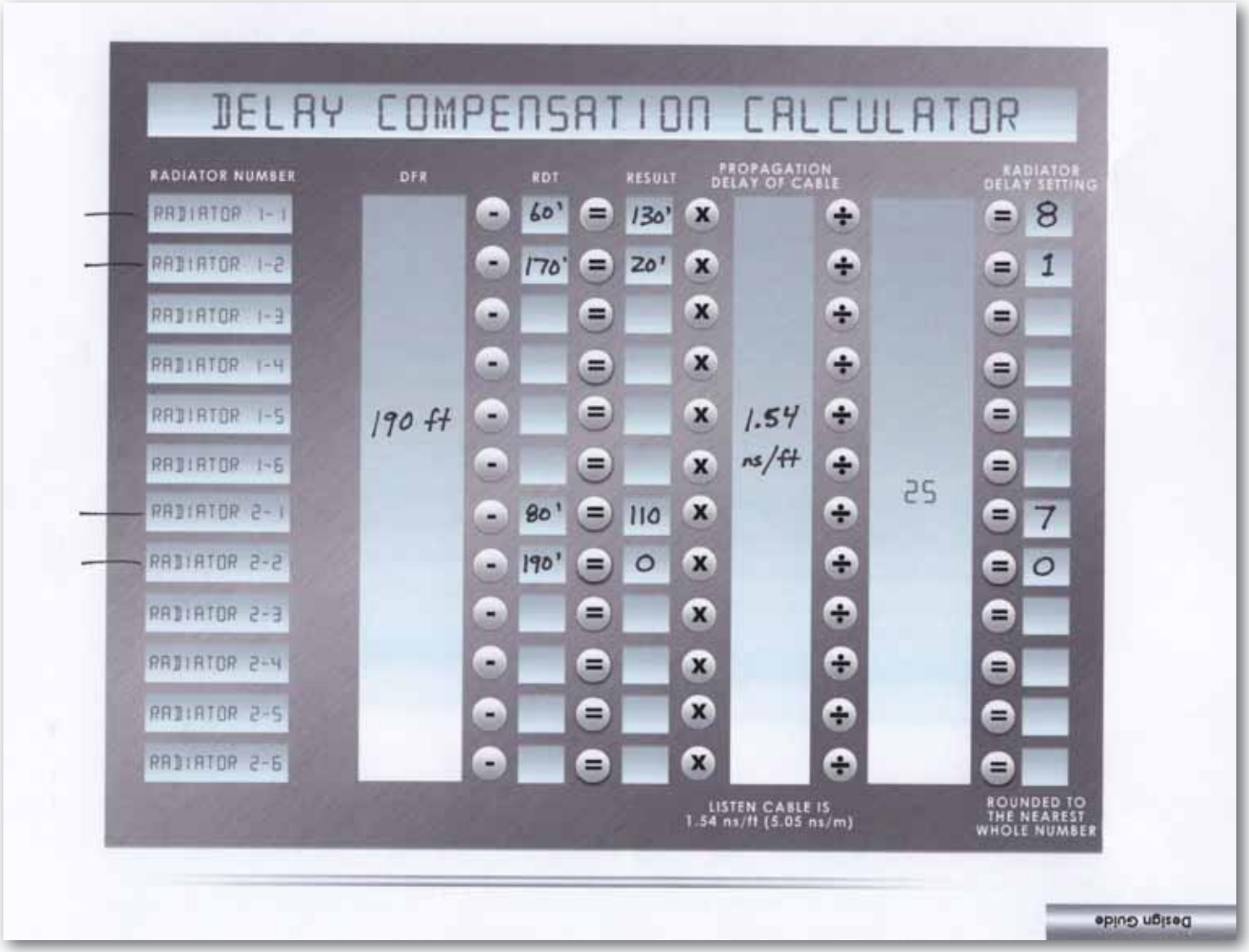
Determine and record the propagation delay of the coaxial cable being used. For Listen coaxial cable the delay is 1.54 ns/ft or 5.05 ns/m. This information can be obtained from the specification sheets supplied by the cable manufacturer.

4 *Calculate the delay setting for each radiator*

Now calculate the delay setting for each radiator using the Delay Compensation Calculator. The calculator uses the following formula to determine the delay setting of each radiator:

Delay Setting = (DFR – RDT) x CD / 25

Designing a System



6 Complete the system materials worksheet

Complete the system materials worksheet that determines the quantity of each part number required for your system. Use the Room and System Layout Worksheets to fill in this form found in the last section of this guide.

6A *Transmitters*

Fill in the number of transmitters required. Each transmitter includes a short piece (15 inches) of RG-58 coaxial RF cable for multiple channel installation interconnections. You do not need to order this cable.

6B *Transmitter Rack Mounting*

Fill in the number of rack mounting kits required. One rack mount kit can mount two LT-82 transmitters.

6C *Radiators*

Fill in the number of each type of radiator required. Each radiator comes with mounting brackets for most types of installation. In addition, the radiator comes with 25 ft (7.6 m) of coaxial RF and CAT-5 power cables.

Designing a System

6D Radiator Mounting Options

Since the radiator comes with most radiator mounting options, there are only two additional choices.

1 Dual radiator mounting

The LA-342 dual radiator mounting bracket allows you to mount two radiators together (vertically or horizontally). This includes short lengths of coaxial RF and CAT-5 power cables.

2 Floor stand

The LA-337 is a floor stand for portable applications.

6E Radiator Power Supplies

Fill in the number and type of LA-205 power supplies required (if any).

6E Cables

From the System Layout Worksheet, insert the cable lengths for the preassembled coaxial RF cables (LA-391) and CAT-5 power cables (LA-393).

6F Receivers

There are two types of receivers to choose from. You may want to choose a combination of both types of receivers. The stetho type receiver makes it simple to dispense the units and prevents cord tangling. However, the stetho style for some guests is uncomfortable especially for prolonged time periods. The advantage of the lanyard receiver is that you can use many types of different earphones. However this can make it more complicated for distributing and the cords can become tangled. Each receiver comes with an alkaline battery compartment (no batteries). You will need to decide whether to use alkaline AAA batteries (LA-363) or a rechargeable battery pack (LA-364). Alkaline batteries will last about 30 hours while the rechargeable batteries will last about 15 hours. If you order the rechargeable battery packs, you will need to order the 8-Unit Charging/Storage Station (LA-350).

1 Stetho Receiver

Fill in the number of LR-42 Stetho receivers required and the appropriate battery options. You can also order extra replacement tips LA-151 (qty: 20).

2 Lanyard Receiver

Fill in the number of LR-44 lanyard receivers required and the appropriate battery options. You'll also need to choose the quantity and type of earphones. Listen highly recommends the Ear Speaker (LA-164), Stereo Headphones (LA-165) and the Behind-the-Head Headphones (LA-170). Also, it is a good idea to order a quantity of Neck Loops (LA-166) for customers with T-coil equipped hearing aids.

6G Charging/Storage Options

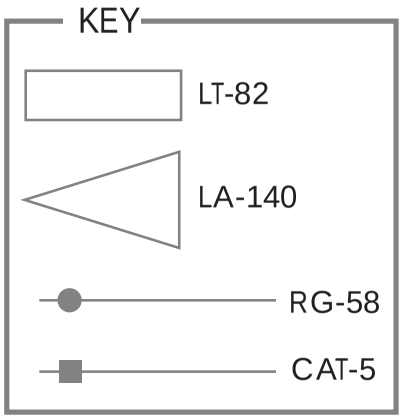
If you chose rechargeable battery packs for receivers, you need to order the appropriate quantity and type of 8-Unit Charging/Storage Stations (LA-350). If not, it's a good idea to order the 8-Unit Storage Station (LA-351). This simplifies the dispensing and storage of receivers. Both the LA-350 and LA-351 can be permanently mounted on a table or on a wall (vertically or horizontally).

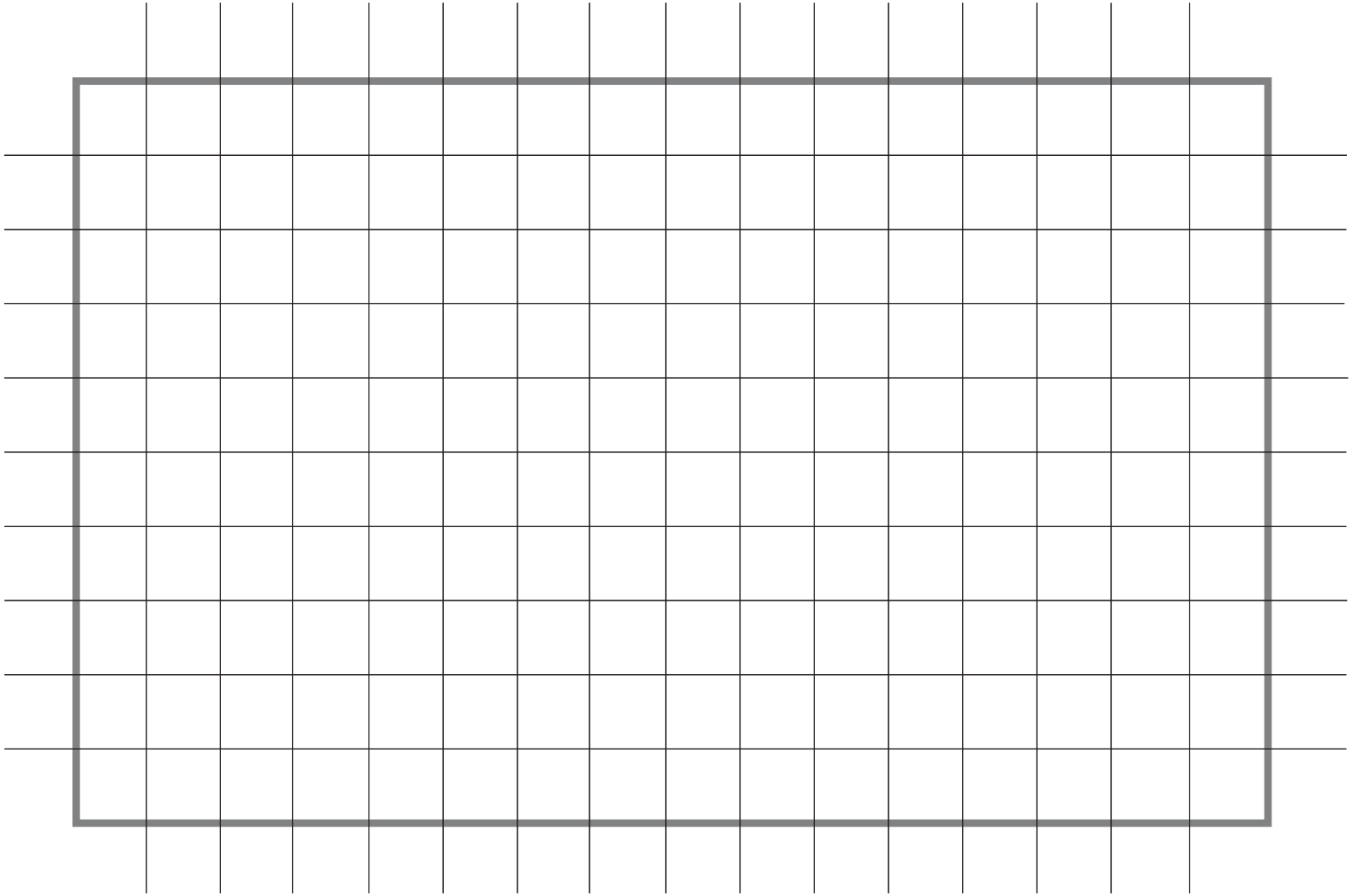
6H Other Accessories

For US customers, Listen offers the ADA Compliance Signage Kit (LA-304). This aids in complying with US ADA regulations.

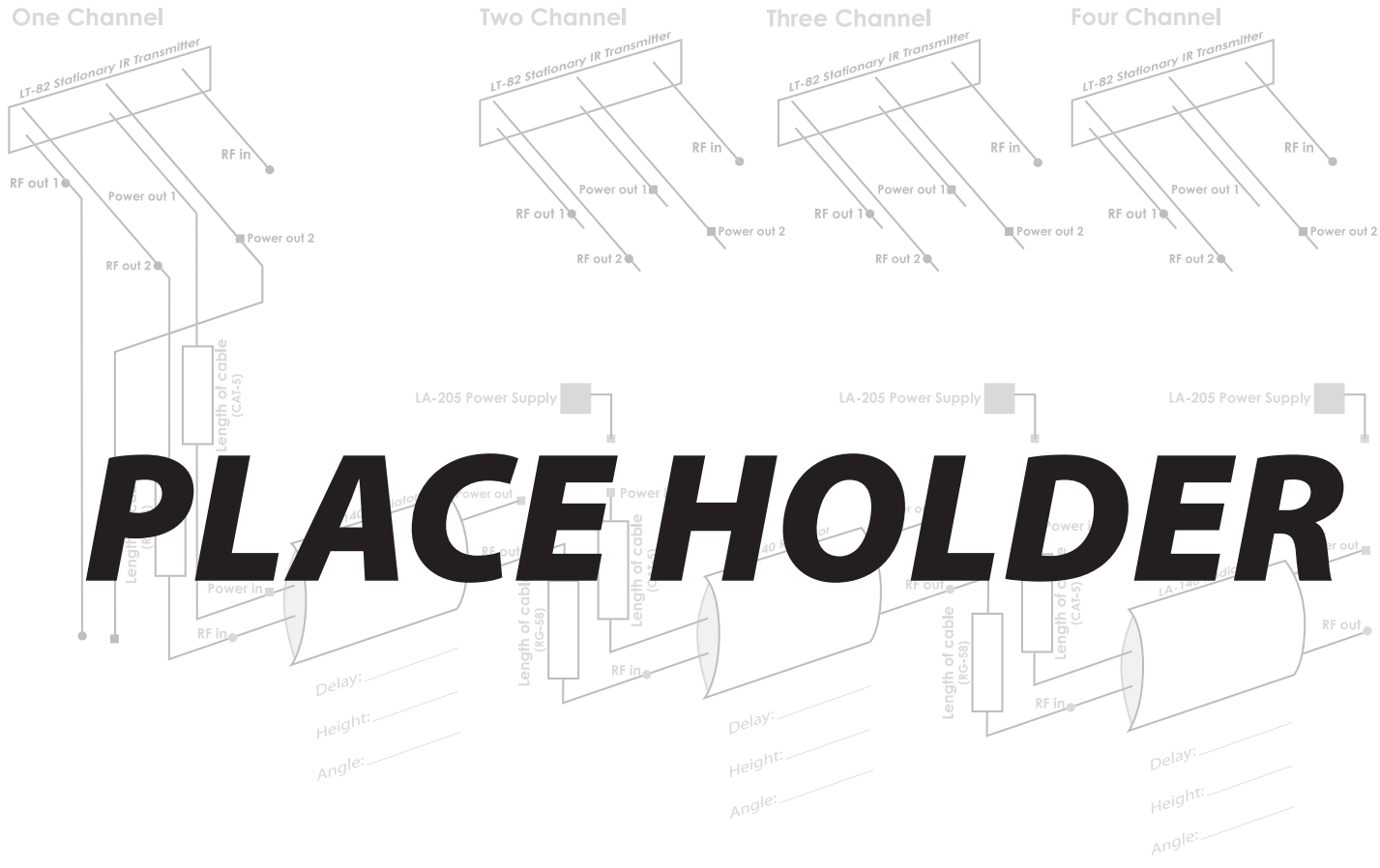
Notes

Room Layout Worksheet

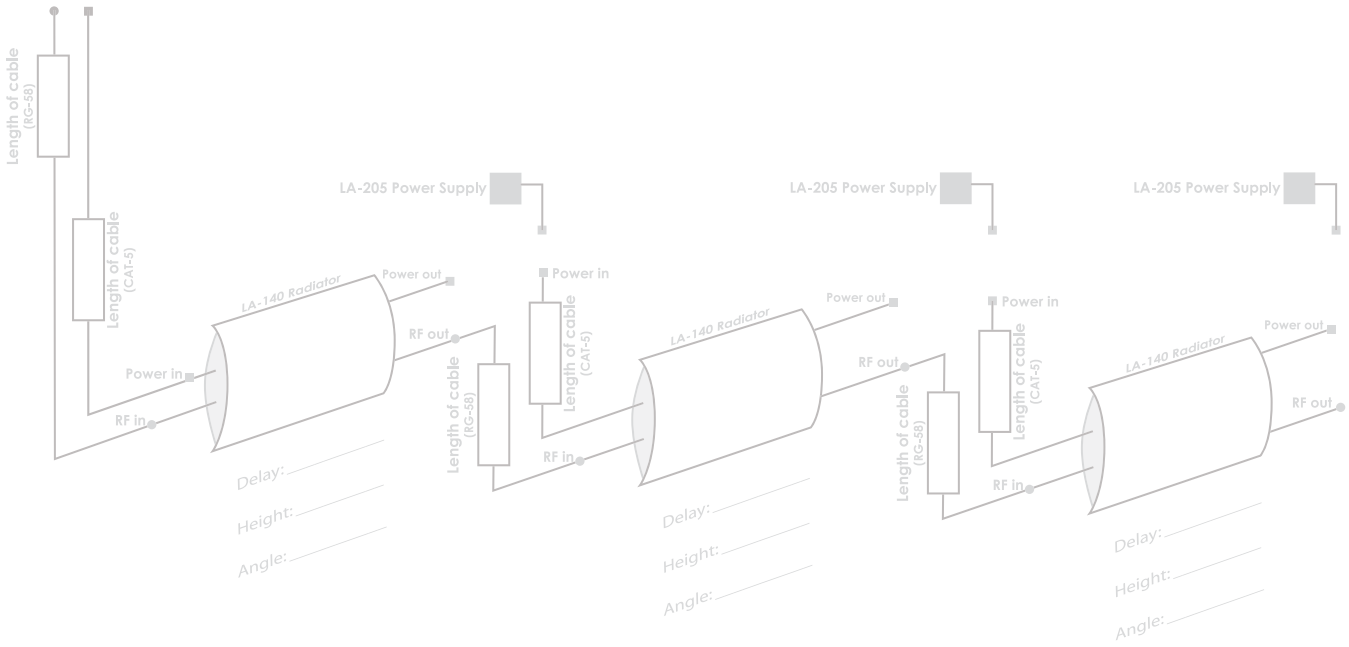


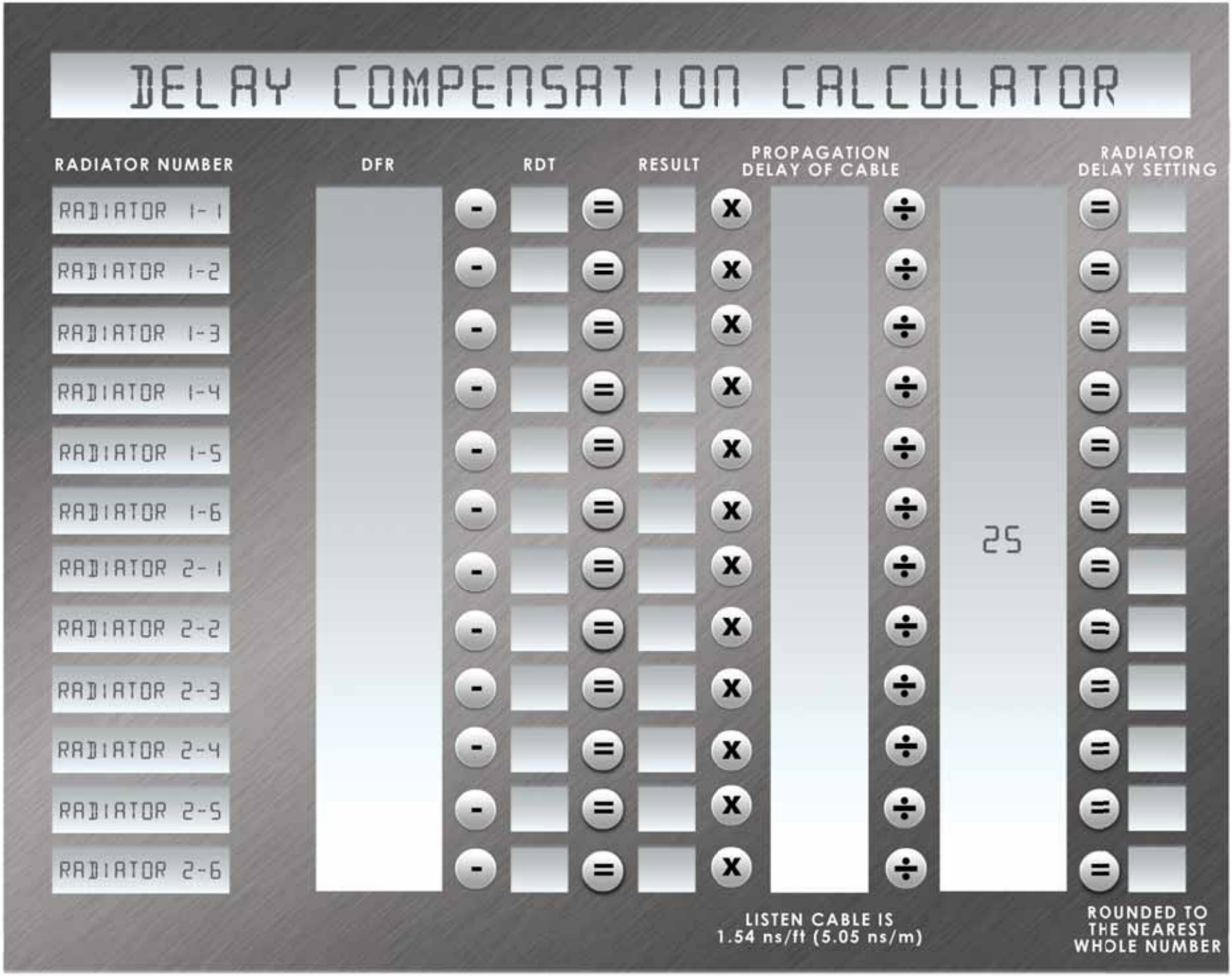


System Layout Worksheet



PLACE HOLDER




DELAY COMPENSATION CALCULATOR
RADIATOR NUMBER
DFR
RDT
RESULT
PROPAGATION DELAY OF CABLE
RADIATOR DELAY SETTING
RADIATOR 1-1
RADIATOR 1-2
RADIATOR 1-3
RADIATOR 1-4
RADIATOR 1-5
RADIATOR 1-6
RADIATOR 2-1
RADIATOR 2-2
RADIATOR 2-3
RADIATOR 2-4
RADIATOR 2-5
RADIATOR 2-6
25
LISTEN CABLE IS 1.54 ns/ft (5.05 ns/m)
ROUNDED TO THE NEAREST WHOLE NUMBER

System Materials Worksheet

Transmitters	Description	Stationary IR Transmitter		
	Power Cord	USA	UK	Euro
	Part Number	LT-82-01	LT-82-02	LT-82-03
	Quantity			

Transmitter Rack Mounting	Description	Universal Rack Mount Kit (Mounts two LT-82 units)
	Part Number	LA-326
	Quantity	

Radiators	Description	Stationary IR Radiator	
	Color	Grey	White
	Part Number	LA-140-GY	LA-140-WH
	Quantity		

Radiator Mounting Options	Description	Dual Radiator Mounting Bracket	IR Radiator Floor Stand
	Part Number	LA-342	LA-337
	Quantity		

Radiator Power Supplies Required	Description	IR System Power Supply		
	Power Cord	USA	UK	Euro
	Part Number	LA-205-01	LA-205-02	LA-205-03
	Quantity			

Cables (length in feet)	Description	BNC/RG-58 Coaxial Cable Preassembled (RF)	RJ-45/CAT-5 Cable Preassembled (Power)
	Part Number	LA-391	LA-393
	Cable 1		
	Cable 2		
	Cable 3		
	Cable 4		
	Cable 5		
	Cable 6		
	Cable 7		
	Cable 8		
	Cable 9		
	Cable 10		
	Cable 11		
	Cable 12		
	Note: Each radiator includes 25 feet (7.6 meters) of RG-58 coaxial RF cable and CAT-5 power supply cable.		

Receivers	Stetho Receiver	Description	Stetho Receiver	Rechargeable Battery Pack	Alkaline Batteries	Replacement Eartips (20)
		Part Number	LR-42	LA-364	LA-363	LA-151
		Quantity				

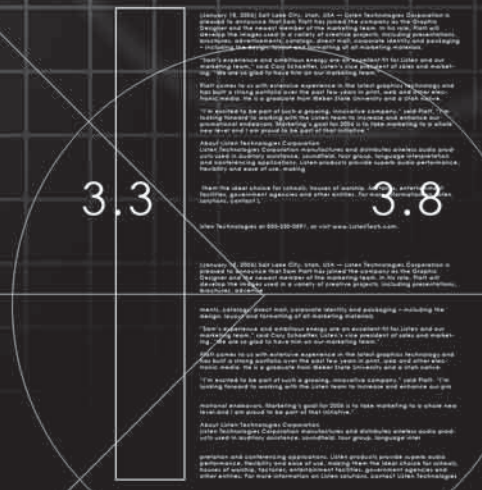
Receivers	Lanyard Receiver	Description	Lanyard Receiver	Rechargeable Battery Pack	Alkaline Batteries	Ear Speaker	Stereo Head-phones	Behind-the -Headphones	Neck Loop	Single Ear Bud	Dual Ear Buds
		Part Number	LR-44	LA-364	LA-363	LA-164	LA-165	LA-170	LA-166	LA-161	LA-162
		Quantity									

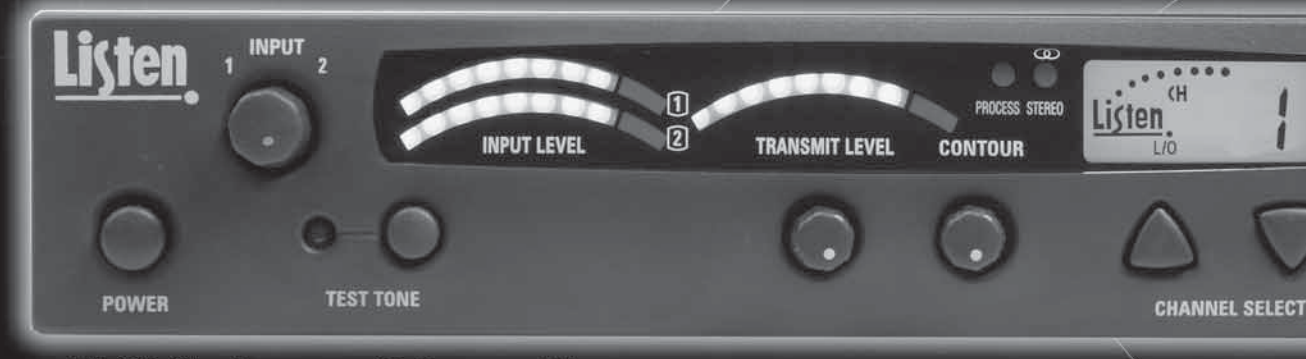
Charging/Storage Stations	Description	8-Unit Charging/Storage Station				8-Unit Storage Station			
	Power Cord	USA	UK	Euro		N/A			
	Part Number	LA-350-01	LA-350-02	LA-350-03		LA-351			
	Quantity								

Other Accessories	Description	ADA Compliance Signage Kit (US Only)
	Part Number	LA-304
	Quantity	

stationary IR•

2.3 2.8 3.3 3.8





LT-82 Stationary IR Transmitter

Listen®

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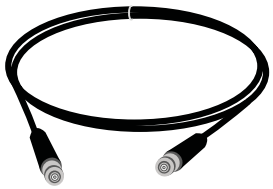
LT-82 User's Manual Table of Contents

Specifications	35
Block Diagram	36
Quick Reference Page	37
Setup and Operating Instructions	38
Accessories for LT-82	43

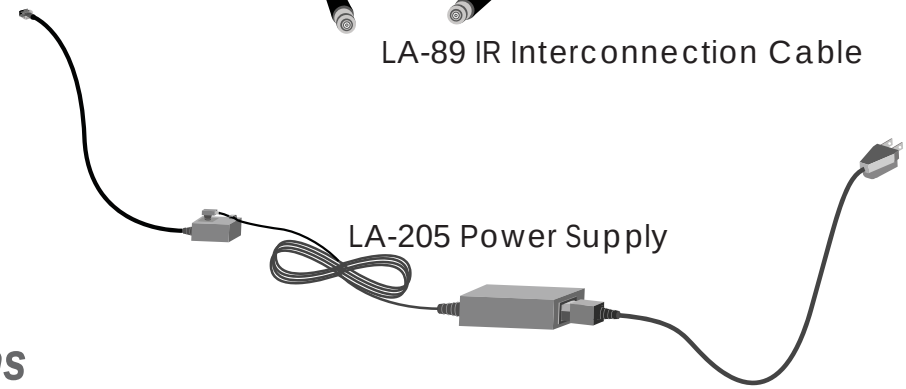
LT-82 Package Contents

- LT-82 IR Transmitter
- LA-205 Power Supply
- LA-89 IR Interconnection Cable
- IR System Design Guide and User's Manual
- LT-82 Quick Reference Card

LT-82 IR Transmitter



LA-89 IR Interconnection Cable



LA-205 Power Supply

Listen Configurations

- LT-82-01 (North America)
- LT-82-02 (UK)
- LT-82-03 (Euro)

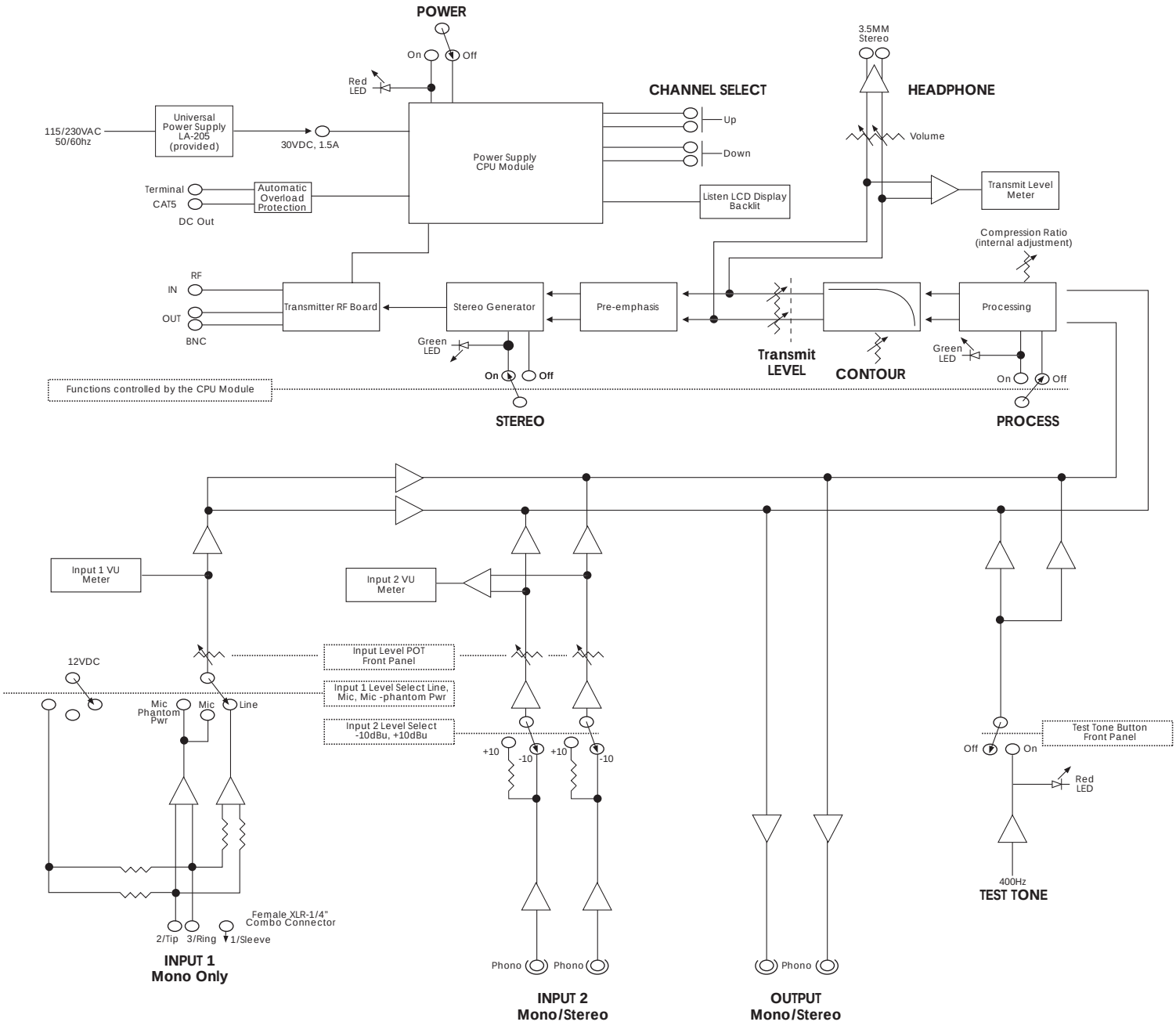
LT-82 Specifications

Architectural Specification

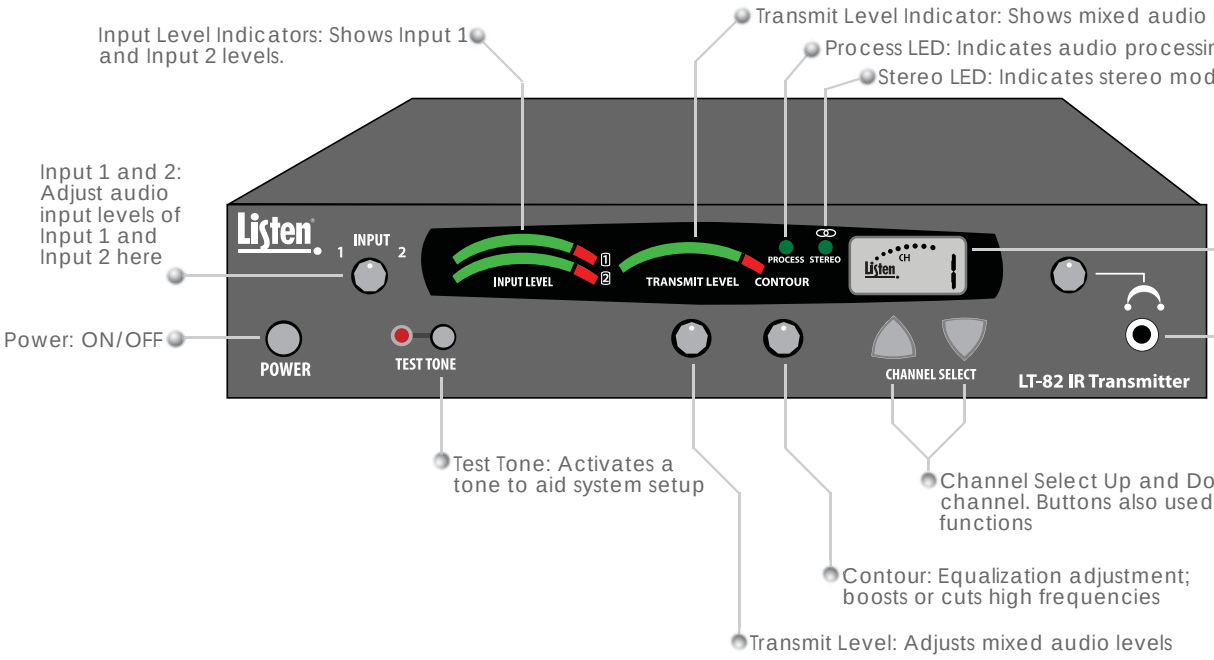
The Stationary IR Transmitter shall be capable of broadcasting on four mono or stereo carriers: 2.3, 2.8, 3.3 and 3.8 MHz. Channel selection shall be capable of being locked. Multiple transmitters shall be capable of being daisy-chained together to transmit up to four channels simultaneously. The transmitter shall have a timer that shuts off the carriers after 30 minutes when no audio is present at the transmitter. The transmitter shall have a SNR of 60 db or better. The device shall have an audio frequency response of 63 Hz to 15 kHz, +/- 3db. It shall have two mixing audio inputs, one balanced XLR/phone input and one unbalanced RCA input. The device shall have the following audio controls: input level, transmit level, contour level and stereo on/off control. The device shall have an audio processor that is capable of automatic gain control and limiting. The transmitter shall provide power for up to two radiators over CAT-5 cable. The LT-82 is specified.

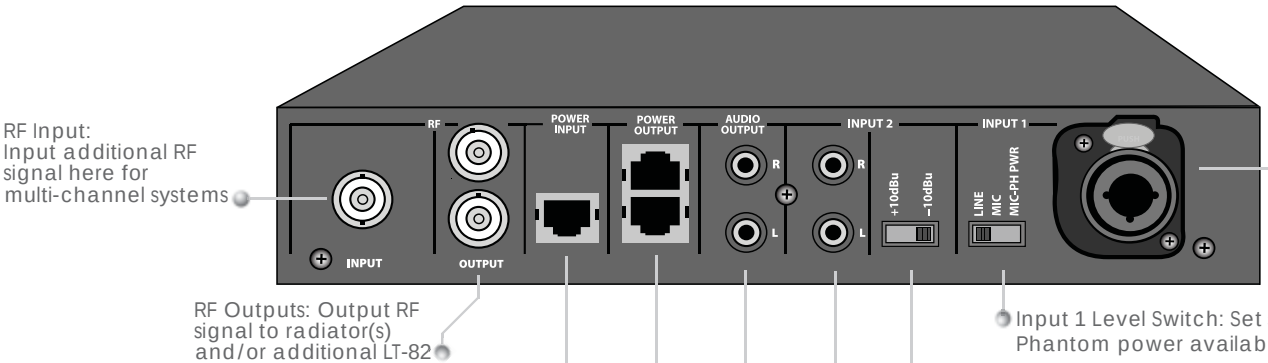
	Specification	LT-82
RF	Carrier Frequencies	Selectable: 2.3 MHz, 2.8 MHz, 3.3 MHz, 3.8 MHz
	Number of Channels	Four channels. Selectable one channel per transmitter (mono or stereo)
	Carrier Shut Off	Carrier will shut off when no audio is present for 30 minutes to preserve radiator life.
	Frequency Accuracy	+/- .005% stability 0 to 50C
	Transmitter Stability	50 PPM
	RF Output	(Two (2) BNC connectors, for connection to radiator(s) and/or additional transmitter(s). 50 mV, 50 ohm, -15 dBm
	RF Input	One (1) BNC connector, for connection from additional transmitter(s). 50 mV, 50 ohm, -15 dBm
	Compliance	FCC Part 15, Industry Canada, CE, RoHS
Audio	** All system specifications are wireless end-to-end	
	System Frequency Response	63Hz - 15kHz (+/- 3dB)
	System Signal to Noise Ratio (A-weighted)	Mono: >60dB
		Stereo: >52dB
	System Distortion	<2% total harmonic distortion (THD)
	Audio Input 1	Mono Input (Rear Panel). Female-XLR and 1/4 in combo connector, balanced, 0/-55dBu (line/mic) nominal input level adjustable; -30/+21dBu (mic/line) maximum input level; impedance 20k/1k ohms (line/mic); phantom power +12VDC
	Audio Input 2	Stereo or Mono Input (Rear Panel). (Two) Phono connectors, unbalanced, -10/+10dBu nominal input level adjustable, +30dBu maximum, impedance 100k ohms
	Audio Processing	Compression can be turned on/off. Slope adjustable from 1:1 to 4:1. Default 2:1
	Contour	Cuts and boosts frequencies above 5 kHz
	Combined Audio Output (Mix)	Input 1 and Input 2 Mixed Output (Rear panel). Two (2) Phono connectors, unbalanced, -10dBu nominal output level, +19dBu maximum, impedance 10 ohms.
	Headphone Output (Monitor)	Front panel. (One) 3.5mm connector, unbalanced, adjustable output level, +7dBu maximum, impedance 10 ohms. 100mW, 32 ohms, 3.5mm stereo.
Controls	Front Panel	Power, Test Tone on/off, Channel up/down, Input Level, Transmit Level, Contour, Headset Level
	Rear Panel	Input 1 Level (Line, Mic, Mic-Phantom Power), Input 2 Level (-10/+10 dBu)
	Internal Adjustments	Compression ratio for audio processor
	Programming	Stereo on/off, Processing on/off
Indicators	Unit Power	Red LED illuminates when the unit is powered up (front panel)
	Input 1, Input 2, Transmit Level	Indicates Input 1, Input 2, and Transmit audio levels. 10 segment LED's (8 green, 2 red)
	Stereo	Indicated by a green LED when on (front panel)
	Processing	Indicated by a green LED when on (front panel)
	RF Carrier	Indicates carrier is active on the LCD Display (front panel)
	LCD Display	Channel designation, lock status, RF Carrier, programming (front panel)
	Test Tone	Red LED illuminates when test tone enabled (front panel)
Power	Power Supply	In-line switching mode power supply, Listen part number LA-205
		Input: 100-240 VAC, 47-63 hz
		Output: 30 VDC, 1.5 A
		Output Connector: RJ-45
		Compliance: UL and CE Listed
	Power Output:	Two (2) RJ-45 jacks. For remote powering up to 2 radiators.
	Power Line Cord	North America, Type B, (LT-82-01)
		Asia, UK, Type G, (LT-82-02)
		Euro type J, (LA-82-03)
Physical	Dimensions (H x W x D)	1.75 x 8.50 x 9.13 in (4.5 x 21.5 x 23 cm)
	Color	Grey with White Silk Screening
	Unit Weight	2.6 lbs (5.7 kg)
	Unit Weight with LA-205 Power Supply	3.8 lbs (8.3 kg)
	Shipping Weight	4.4 lbs (9.7 kg)
	Rack Mounting	One rack space height, 1/2 rack space wide. One or two transmitters can be mounted in one rack space. Optional rack mount (LA-326) not included.
Environmental	Temperature - Operation	-10 C (14 F) to +40 (104 F)
	Temperature - Storage	-20 C (-4 F) to +50 (122 F)
	Humidity	0 to 95% relative humidity, non-condensing
•Specifications are subject to change without notification.		

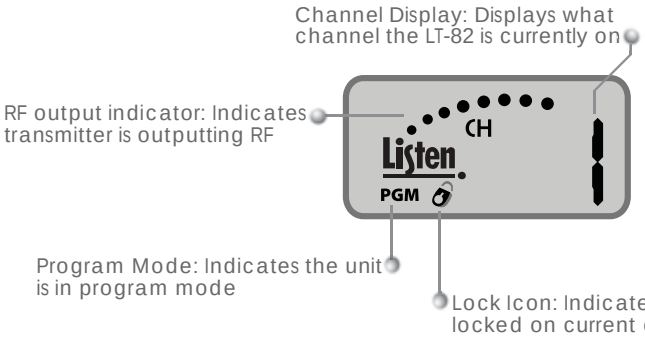
LT-82 Block Diagram



LT-82 Quick Reference


Input Level Indicators: Shows Input 1 and Input 2 levels.
Transmit Level Indicator: Shows mixed audio level
Process LED: Indicates audio processing mode is active
Stereo LED: Indicates stereo mode is active
Input 1 and 2: Adjust audio input levels of Input 1 and Input 2 here
LCD Display: See LCD Display quick reference
Power: ON/OFF
Monitor Jack: Plug in a headset to monitor audio
Test Tone: Activates a tone to aid system setup
Channel Select Up and Down: Use to select channel. Buttons also used for programming functions
Contour: Equalization adjustment; boosts or cuts high frequencies
Transmit Level: Adjusts mixed audio levels
Listen
INPUT
1
2
INPUT LEVEL
TRANSMIT LEVEL
CONTOUR
PROCESS
STEREO
CH
POWER
TEST TONE
CHANNEL SELECT
LT-82 IR Transmitter


RF Input: Input additional RF signal here for multi-channel systems
Input 1: Balanced input for connection of a line level or microphone; accepts either a XLR or ¼" phono plug
RF Outputs: Output RF signal to radiator(s) and/or additional LT-82
Input 1 Level Switch: Set switch for line or mic level. Phantom power available in Mic-PH Power position
Input 2 Level Switch: Set switch to match the level of your Input 2 source
Power Input: Connect power supply here (included)
Input 2: Audio inputs; stereo or mono
Audio Outputs: Input 1 and Input 2 mixed audio outputs
Power Outputs: Can be used to power up to two radiators
RF
INPUT
OUTPUT
POWER INPUT
POWER OUTPUT
AUDIO OUTPUT
INPUT 2
INPUT 1
R
L
+10dBu
–10dBu
LINE
MIC
MIC-PH PWR

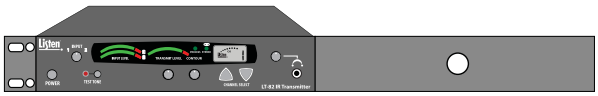

Channel Display: Displays what channel the LT-82 is currently on
RF output indicator: Indicates transmitter is outputting RF
Program Mode: Indicates the unit is in program mode
Lock Icon: Indicates the unit is locked on current channel
CH
Listen
PGM

1 Unpack the Product

Remove outer packaging and plastic cover. Verify all components are present and no physical damage has occurred to the product.

2 Mount LT-82(s) in Rack (if desired)

If rack mounting the transmitter(s), install the optional rack mount kit (part LA-326) according to the instructions included with the kit.

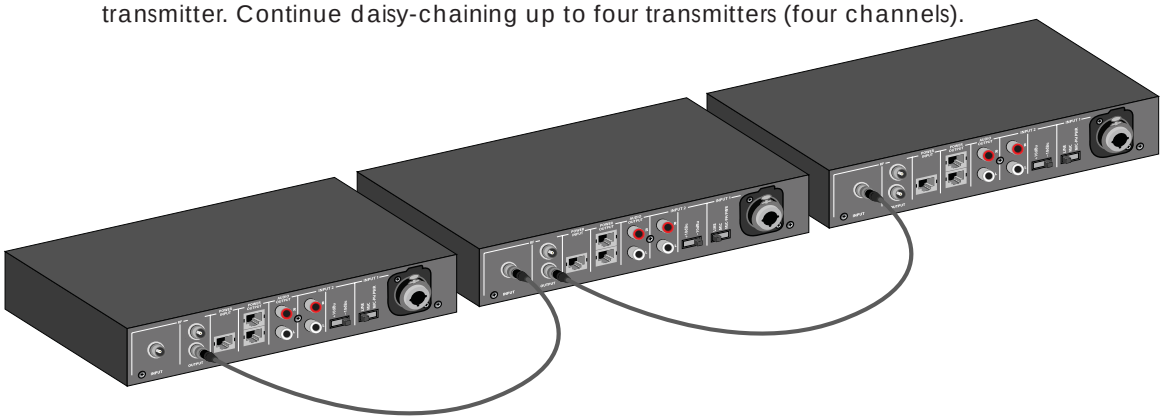


Rack Mount with single unit installed.

Rack Mount with dual units installed.

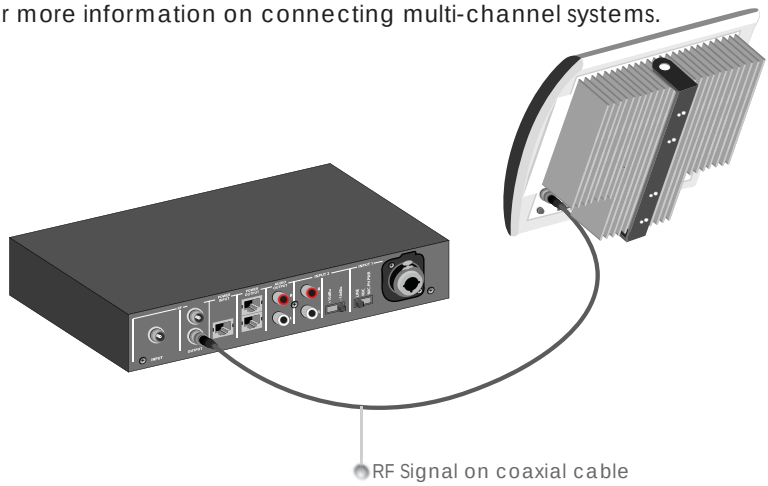
3 Interconnect Multiple LT-82s (if necessary)

If installing more than one transmitter (for multi-channel applications) it will be necessary to daisy-chain the transmitters. Connect RF output on first transmitter to RF input on second transmitter. Continue daisy-chaining up to four transmitters (four channels).



4 Connect LT-82 RF Signal to Radiator(s)

Connect RF output on transmitter to RF input on radiator. In multi-channel systems connect the last transmitter in the daisy-chain to the radiator(s) RF input. See design guide for more information on connecting multi-channel systems.

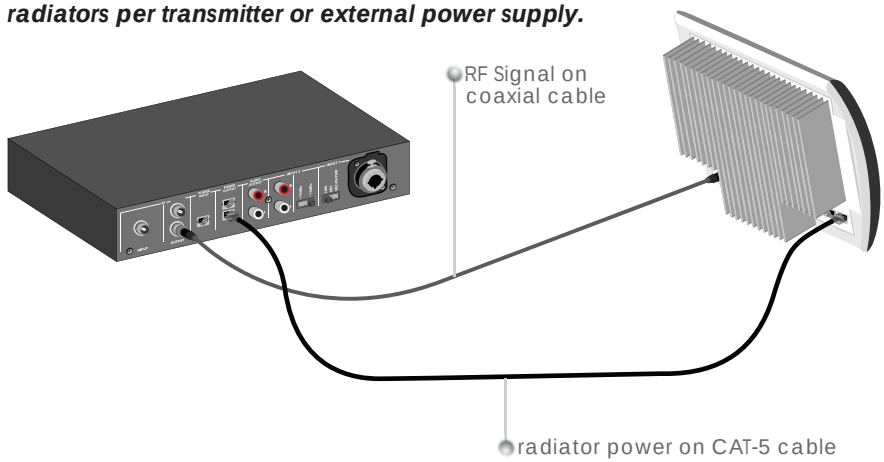


RF Signal on coaxial cable

5 Connect LT-82 Power to Radiator(s)(if desired)

The radiator(s) can be powered by either the transmitter Power Output or remotely with a power supply (LA-205) near the radiator. If powering the radiator(s) with the transmitter, connect the transmitter Power Output to the radiator Power Input with CAT-5 cable.

Note: A maximum of two radiators can be powered by each LT-82. It is important not to exceed powering more than two radiators per transmitter or external power supply.



6 Powering the LT-82

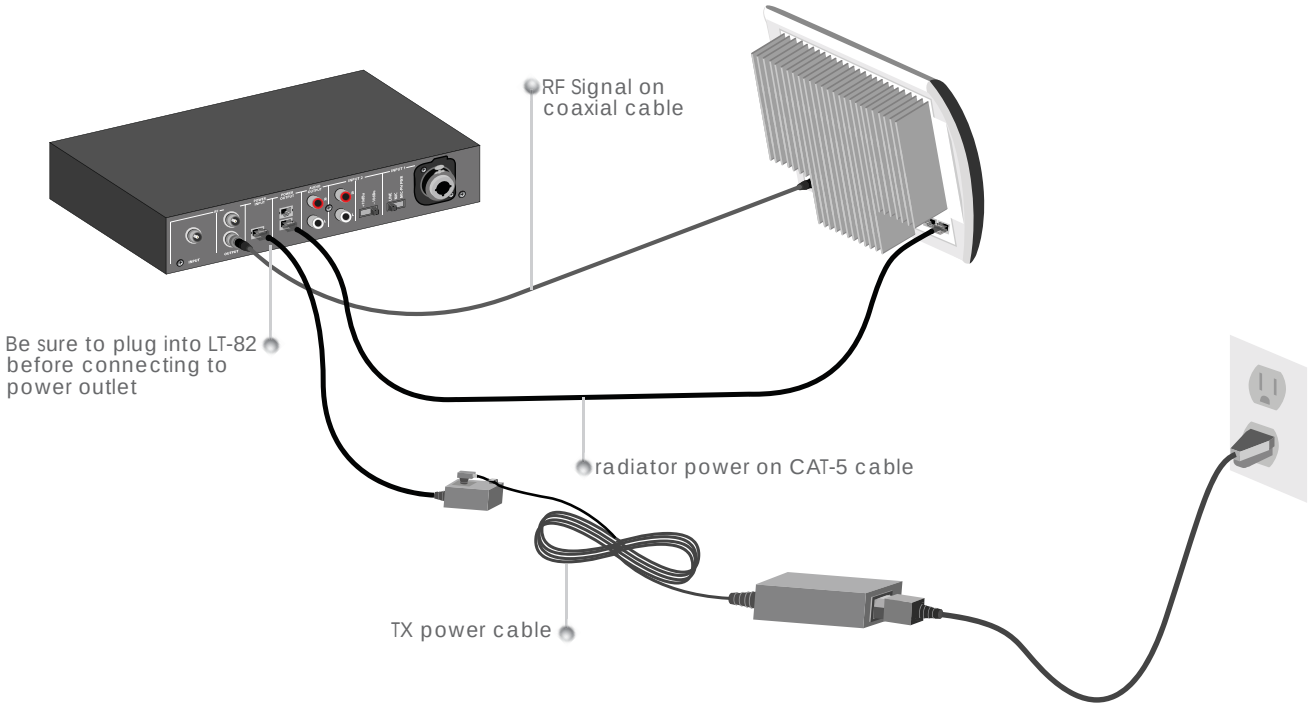
6A Plug the included power supply into the Power Input connection

Plug the included power supply into the Power Input connection on the rear panel of the transmitter, and then plug the power supply into an outlet.

Note: Do not connect the LT-82 power supply to an outlet until all other power connections within the system have been made. This helps to prevent power connection degradation.

6B Press the Power button

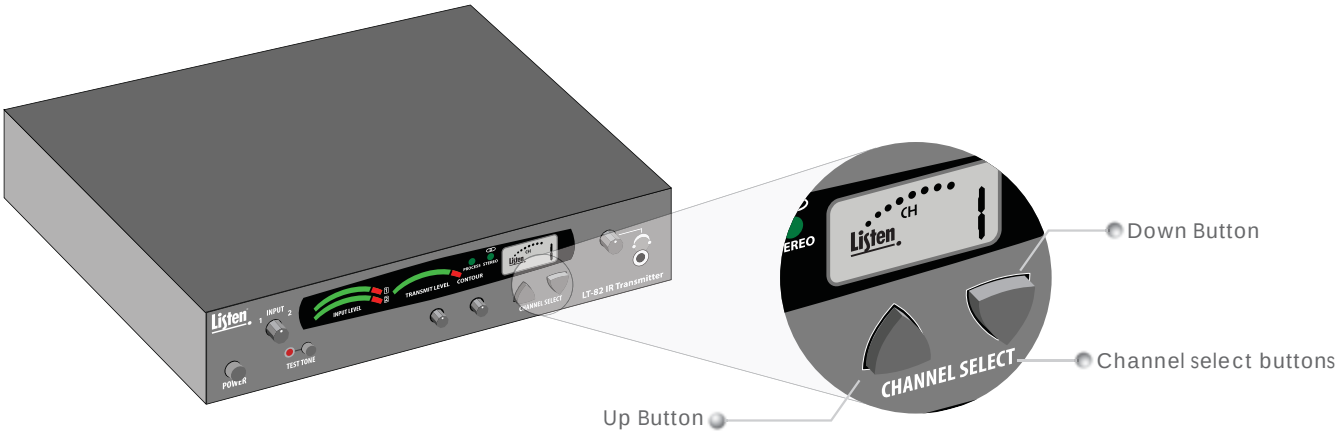
Press the Power button on the front panel of transmitter(s) to turn the unit(s) on.


RF Signal on coaxial cable
Be sure to plug into LT-82 before connecting to power outlet
radiator power on CAT-5 cable
TX power cable

7 Select Operating Channel

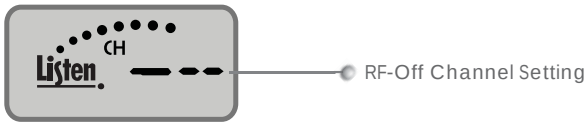
7A Select the operating channel

Select the operating channel (1-4). For single channel systems any channel can be used. In multi-channel systems each transmitter must be on a different channel.



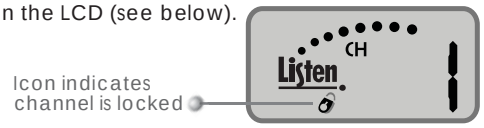
7B RF-Off Channel Setting Information

This channel does not have a carrier present however allows pass through from RF input to RF output. This allows a channel to be disabled in a daisy chain but allows the system to still operate as the RF signal from the transmitter(s) before it will still pass through. Note that the power (RJ-45 with CAT-5 connectors) will pass through in all conditions (unit off, channel -- or channels 1-4).



7C After channels have been selected, the transmitter(s) can be locked

After channels have been selected, the transmitter(s) can be locked on that channel by pressing and holding the Channel Select Up button for three seconds. When locked, a padlock icon will be displayed on the LCD (see below).

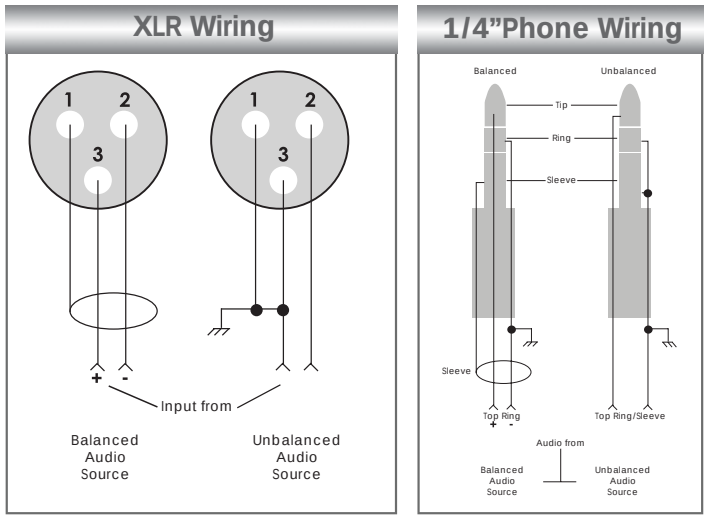


8 Connect Audio Inputs

The LT-82 has two audio input options: Input 1 and Input 2. Input 1 is a balanced connection using either an XLR or 1/4" phono connector. Input 2 has two unbalanced mixing phono connectors. Use Input 1 if you are using a microphone or if you have a balanced connection such as from a professional audio mixer (you can also use Input 1 for unbalanced connections). Use Input 2 to connect to an unbalanced audio source.

8A If using Input 1

Connect the audio source(s) to one or both audio input connections. Input 1 offers a choice of balanced XLR or 1/4" phono connector. Plug your microphone into Input 1 and move the input select switch to Mic (for dynamic microphones) or Mic + PH Power (for condenser microphones). Plug your balanced or unbalanced audio source into Input 1. Use the following diagram.



8B If using Input 2

Plug your unbalanced audio source into Input 2 and select the audio level switch for -10dBu or +10dBu, to match the audio level coming from your equipment.

NOTE: When using Input 1 and Input 2 simultaneously, the audio signals will mix together. Input 1 will mix with both left and right signals of Input 2.

8C Test Tone (if necessary)

To broadcast a test tone, press the test tone button. This helps to test receivers when no audio source is available.

9 Set Stereo and Process Features

9A Stereo and Process Mode Descriptions

1 Stereo Mode

A stereo signal can be transmitted to the receivers. Input 2 must be used if a stereo signal is desired and the stereo mode must be enabled on the transmitter.

Note: If the transmitter is in stereo mode the receivers will need to be put into stereo mode. Refer to page 102 for more information.

2 Process Mode

Process mode is used for Audio Gain Control (AGC). With the process mode enabled, the LT-82 will automatically adjust for inconsistent signal input levels by raising or lowering the signal level accordingly to provide a consistent sound output level. This feature should be used in applications where a consistent sound level is important and the input levels vary substantially. Typically you would not want to engage the Process Mode when a speaker's emphasis is critical to the message they are conveying.

9B To Disable or Enable Stereo and Process Features

1 Transmitter is shipped to you with Stereo and Process disabled

Your transmitter is shipped to you with Stereo and Process disabled.

2 With the unit on press and hold the channel select "Down" button

With the unit on, press and hold the channel select "Down" button for eight seconds. The program (PGM) icon will appear on the LCD. Once in the program mode, the Stereo and Process features can be turned on and off by pressing the channel select buttons. Press the channel select "Up" button to toggle between Process On and Off. Press the channel select "Down" button to toggle between Stereo On and Off.

If the green LED is displayed on the front panel, that feature is enabled. Once you have enabled or disabled the features as desired, let the transmitter exit the program mode by waiting five seconds.

10 Set Auto-Timeout Feature

10A If 30 minutes passes without audio to transmitter the unit will stop sending a signal to the radiators

When the L/O icon is illuminated on the LCD and a period of 30 minutes passes without audio being input to the transmitter the unit will stop sending a signal to the radiators. This is done to help conserve LED life on the radiators.

10B To disable or enable Auto-Timeout Feature

1 Your transmitter is shipped to you with the Auto-Timeout Feature enabled

Your transmitter is shipped to you with the Auto-Timeout Feature enabled.

2 To disable the Auto-Timeout Feature

To disable the Auto-Timeout Feature press and hold the "down" button while turning the unit on.

3 To enable the Auto-Timeout Feature

To enable the Auto-Timeout Feature press and hold the "up" button while turning the unit on.

Accessories for LT-82

Accessories

LA-326 Universal
Rack Mounting Kit
Will mount up to two LT-82 units

LA-112
RG-58 50 Ohm Coaxial Cable
Specify length

LA-70
CAT-5 Cable
Specify length

LA-391
RG-58/50 Ohm Coaxial Cable
Preassembled, specify length

LA-115
RG-58 BNC to
BNC Coupler

LA-127
RG-58 BNC Connector

LA-393
RJ-45/CAT-5
Preassembled, specify length

LA-71
RJ-45 CAT-5 Connector
(Pkg. of 10)

LA-72
RJ-45 to RJ-45 CAT-5 Coupler

Notes

Notes

Notes

stationary IR•

2.3 2.8 3.3 3.8

LA-140 IR Radiator

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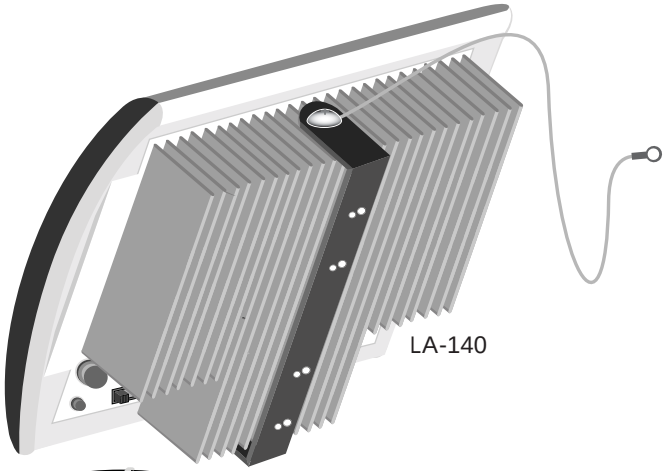
LA-140 User's Manual Table of Contents

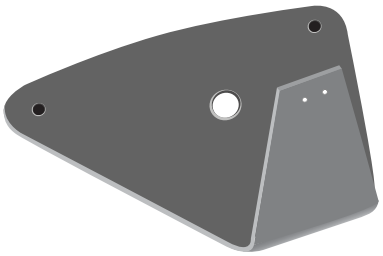
Specifications	53
Quick Reference Page	54
Setup Instructions	55
LED Indications	57
Mounting Your Radiator	58
Accessories for LA-140	78

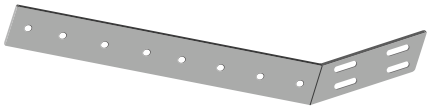
LA-140 Package Contents

- LA-140 Stationary IR Radiator
- IR Radiator Quick Reference Card
- 25 feet RG-58 Coaxial Cable
- 25 feet CAT-5 Power Cable
- IR Radiator Mounting Hardware
  - Universal Bracket
  - Tilt Arm "A"
  - Tilt Arm "B"
  - Tilt Bolt
  - Corner Mount Bracket
  - Wall Box Plate
  - Wall Box Plate Mounting Screws
  - Hollow Wall Anchors with Screws
  - Mounting Hardware Screws
  - Universal Stand Nut


LA-140

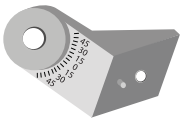
Coaxial RG-58 (25 feet
CAT-5 (25 feet)

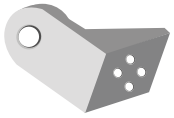

Universal Bracket

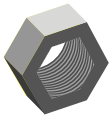

Corner Mount Bracket

Mounting Hardware Screws

Tilt Bolt

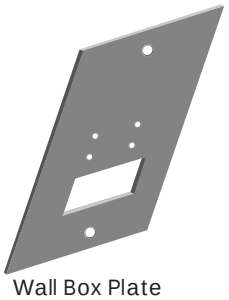

Tilt Arm "A"


Tilt Arm "B"


Universal Stand Nut

Hollow Wall Anchors with Screws

Wall Box Plate Mounting Screws


Wall Box Plate

Listen Configurations

- LA-140-GY (grey)
- LA-140-WH (white)

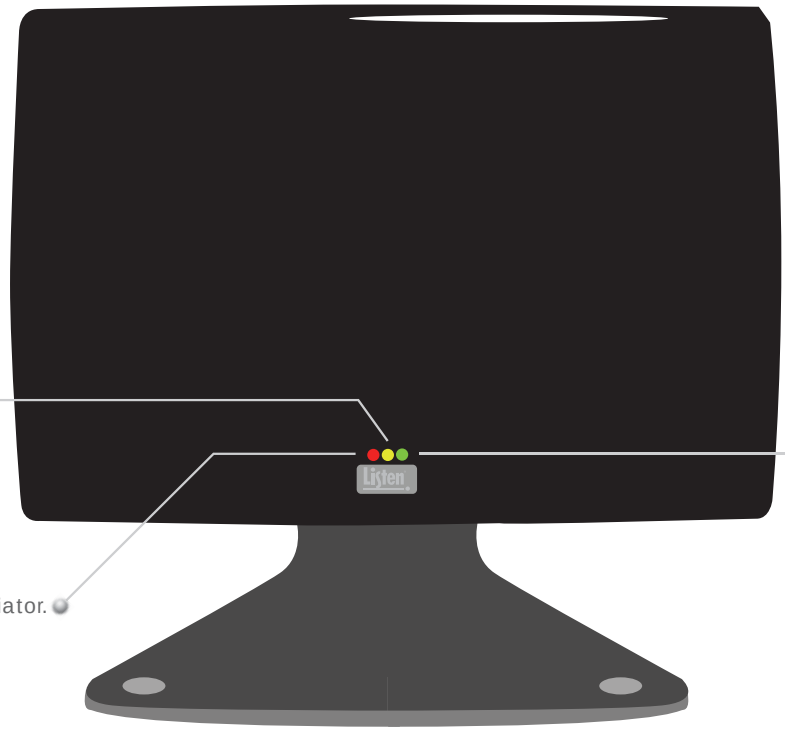
LA-140 Specifications

Architectural Specification

The radiator-emitter shall have a transmitting area of no less than 10,000 square feet (one carrier) or greater for each radiator specified when used with specified receiver. The radiator shall be powered via CAT-5 cabling and the RF from the transmitter shall be carried by 50 ohm coaxial cable. The radiator shall have three indicating LEDs for power, no carrier present and carrier present. The radiator LEDs shall be deactivated after 30 minutes if there is no audio signal present from the transmitter. The radiator shall come in a white or grey color and shall include all of the mounting hardware capable of mounting the radiator on a wall, on a ceiling, in a corner, on a desk, on a mic stand, or on a tripod. The Listen LA-140 is specified.

	Specifications	LA-140
RF	Frequency Range	1 MHz - 5 Mhz
	Input	BNC Connection. -25dbm to -5dbm input nominal
	Output	BNC Connection. -15 dbm nominal
	Compliance	FCC Part 15, Industry Canada, CE, RoHS
	Coverage Area	10,000 sf (929 sm) when used with Listen Receivers
Controls	User Controls	Termination Switch, Delay Compensation Switch, Indicator LEDs on/off, compatibility switch.
Indicators	Red LED	Indicates power is present
	Yellow LED	Indicates no connection to transmitter or radiator
	Green LED	Indicates carrier and power are present and radiator is emitting IR signal
Power	Input	RJ-45 connector. 30VDC, powered from transmitter via CAT-5 cable or optional LA-205 power supply.
	Output	RJ-45 connector. 30VDC, powers up to one additional radiator. (Maximum (two) 2 radiators powered from each LT-82 transmitter or LA-205 power supply)
	Emitter Power	3 Watts
Physical	Dimensions (H x W x D)	5.5 x 8.0 x 2.6 inches (140 x 203 x 66 mm)
	Color	LA-140-GY (Grey), LA-140-WH (White)
	Unit Weight	2.1 lbs (.95 kg)
	Unit Weight with Wall/ Ceiling Mounting hardware	2.35 lbs (1.05 kg)
	Shipping Weight	4 lbs (1.8 kg)
Environmental	Temperature - Operation	-10 C (14 F) to +40 (104 F)
	Temperature - Storage	-20 C (-4 F) to +50 (122 F)
	Humidity	0 to 95% relative humidity, non-condensing
•Specifications are subject to change without notification.		

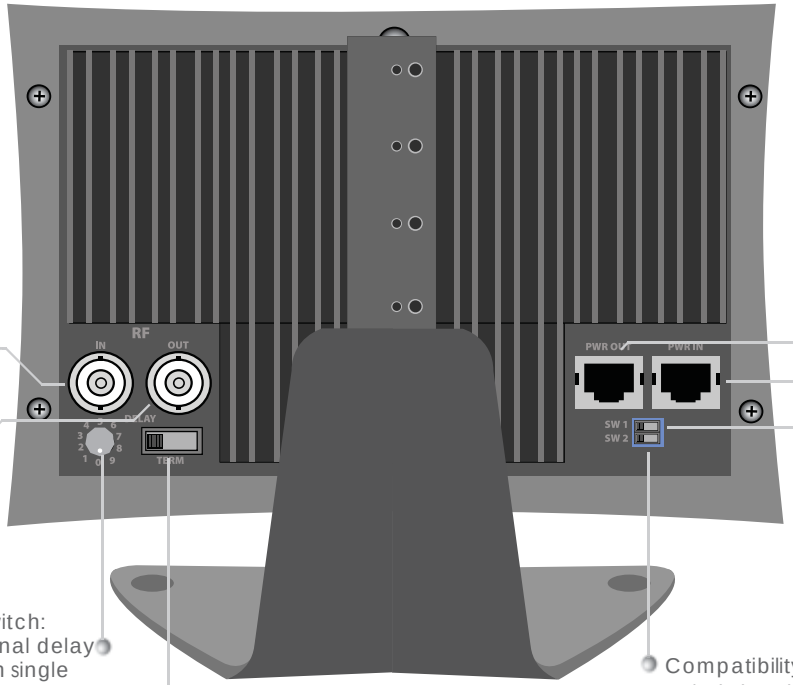
LA-140 Quick Reference



No Connection (Yellow):
This yellow LED is lit when the radiator is not connected to a transmitter or radiator.

Power (Red):
This red LED is lit when there is power to the radiator.

Carrier Present (Green):
This green LED is lit when there is signal present to the radiator. During normal operation the red and green LEDs will be continuously lit.



RF Input:
Input RF signal from a transmitter or radiator here.

RF Output:
Output RF signal to an additional radiator here.

Power Output: Output power here.

Power Input: Connect power here.

LED Indicator Shutoff Switch (SW1):
Controls LED indicators on front of radiator. If switch is set to the "OFF" position, LEDs will not light up on front of radiator.

Delay Compensation Switch:
Adjust the amount of signal delay from the radiator here. In single radiator systems the position of this switch does not matter, in multiple radiator systems this switch must be set properly.
see page 56

Termination Switch: If there is no RF being output from the RF Output connection, this switch must be in the "ON" position.

Compatibility with Other Manufacturer's Switch (SW2): If using a Listen LA-140 Radiator with another manufacturer's transmitter/modulator it is necessary to put this switch in the "ON" position. IMPORTANT: Always ensure SW2 is in the "OFF" position when using a Listen LT-82 Transmitter.

1 Unpack the Product

Remove outer packaging and plastic cover. Verify all components are present and that no physical damage has occurred to the product.

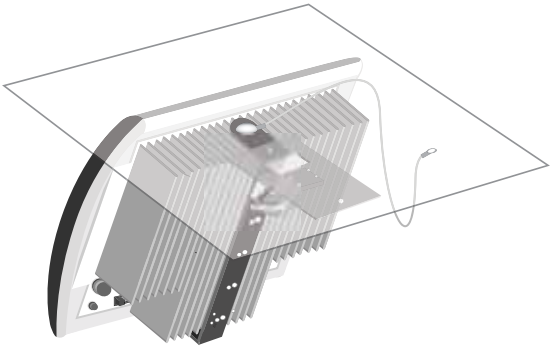
2 Mount Radiator

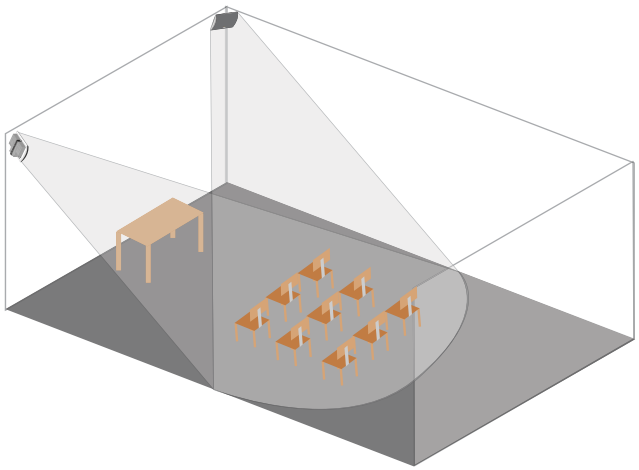
2A Determining Location

Generally a higher location with a clear line of sight to the area the receivers will be used in is recommended. Refer to the design guide for detailed instructions about determining the location to mount the radiator(s).

2B Mounting in Desired Location

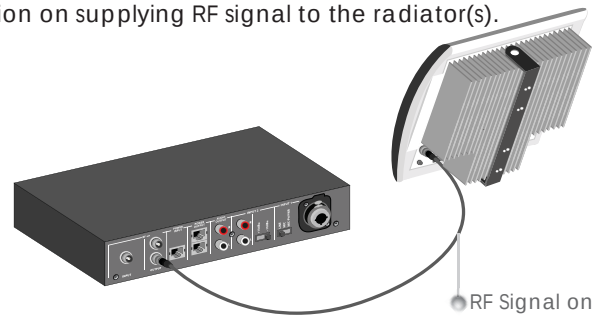
See "Mounting your Radiator" section on page 58 for detailed instructions on mounting your radiator.





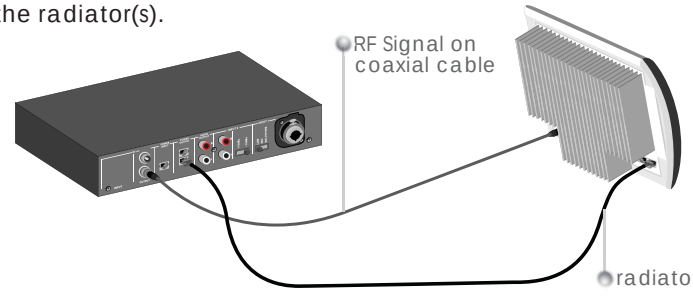
3 Connect RF Signal

Each radiator must be supplied an RF signal on RG-58 coaxial cable. The RF cable can originate either from an LT-82 Transmitter or from a different radiator. Connect the RF signal to the radiator. See design guide for more information on supplying RF signal to the radiator(s).



4 Connect Power

Each radiator must be supplied DC power via CAT-5 cable. One LT-82 Transmitter can power up to two radiators, also up to two radiators can be powered using an "IR Extended Power Supply" (Listen part number LA-205). Connect DC power to the radiator. See design guide for more information on supplying DC power to the radiator(s).



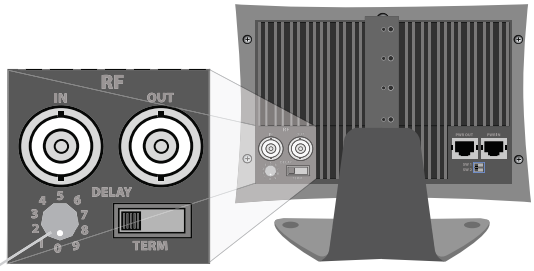
5 Set Delay Compensation Switch

5A Single Radiator Systems

The position of the delay compensation switch does not matter in single radiator systems.

5B Multiple Radiator Systems

It is necessary to select the correct delay compensation switch setting for each radiator to ensure that each radiator transmits the same signal at exactly the same time in an overlapping ,multiple radiator system. Not setting the delay compensation switch correctly will result in reduced coverage area for the system. See design guide page 16 for determining the correct delay compensation switch setting for each radiator in a multiple radiator system.



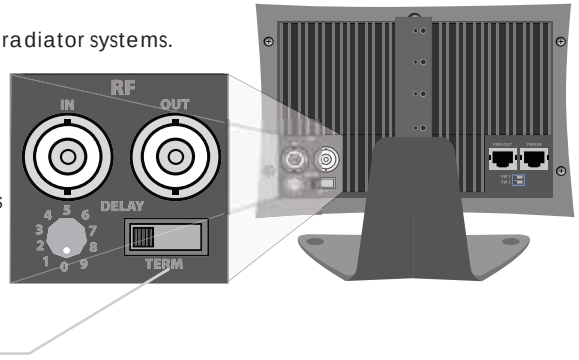
6 Set Termination Switch

6A Single Radiator Systems

Always set the termination switch to the “ON” position in single radiator systems.

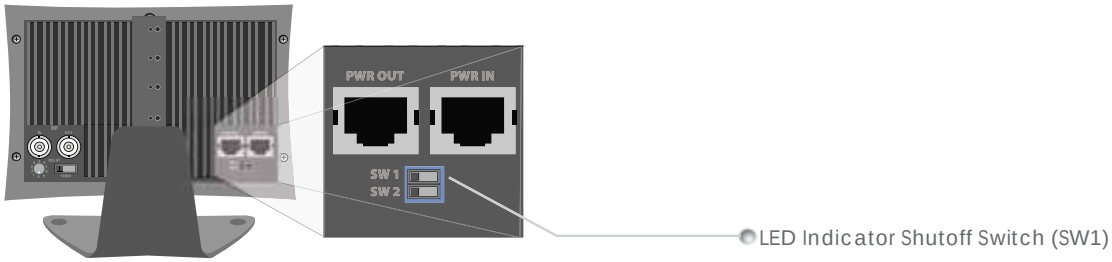
6B Multiple Radiator Systems

Set the termination switch to the “OFF” position on all radiators that are outputting an RF signal to another radiator.
Set the termination switch to the “ON” position on the radiators that are not outputting an RF signal to another radiator.



7 Set LED Indicator Shutoff Switch (SW1)

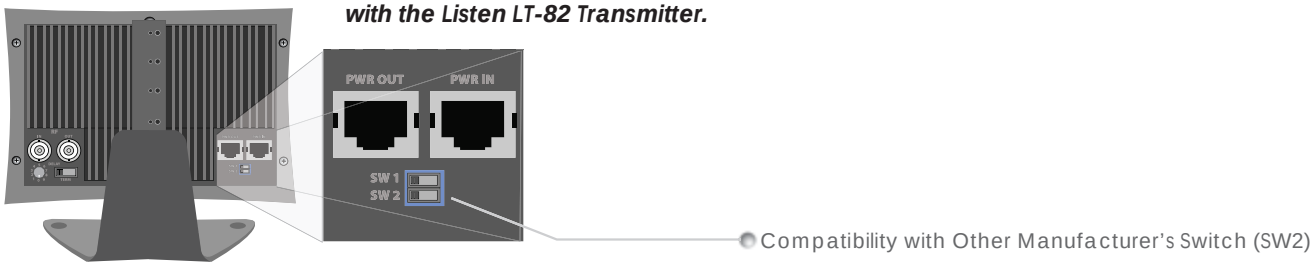
If desired, the three LED indicators on the front of the radiator can be disabled using this switch. Set this switch to the position towards the left side of the rear of the radiator to disable the LED indicators.
To enable the LED indicators set this switch to the position towards the right side of the rear of the radiator.



8 Set Compatibility Switch (SW2)

If using a Listen LT-82 Transmitter with the Listen LA-140 Radiator leave this switch in the "OFF" position. If you are using the Listen LA-140 Radiator with another manufacturer's transmitter/modulator set this switch to the "ON" position.

IMPORTANT: Ensure this switch is in the "OFF" position whenever using the radiator with the Listen LT-82 Transmitter.



9 Front LED Indicators

There are three LEDs located on the bottom center of the front of the radiator. These LEDs are very useful for determining the current status of the radiator. See below for possible LED combinations and how to interpret what the combinations mean.

NOTE: The LEDs can be disabled using switch 1 located on the rear of the radiator. If you believe there is power to the radiator but there are no LED indications on the front of the radiator, switch 1 has likely been set to the "OFF" position. Make sure switch 1 is in the "ON" position before attempting to check the status of the radiator.

9A Red LED

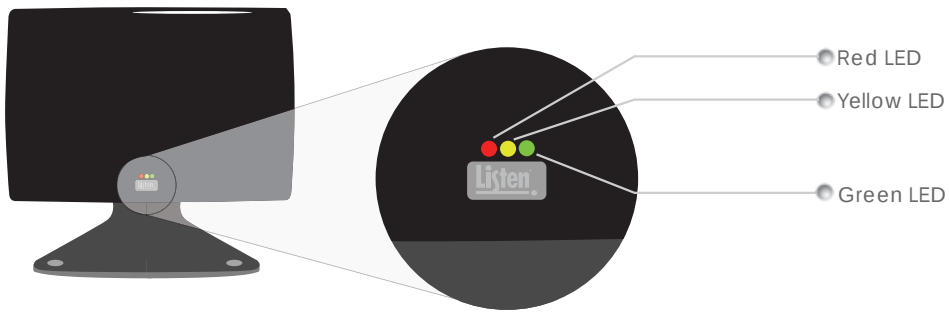
The red LED is the "Power On" LED. If the Red LED is lit, the radiator has power.

9B Yellow LED

The yellow LED is the "no connection" LED. If lit, the radiator is not connected to a transmitter or another radiator. When properly connected the yellow LED will be extinguished.

9C Green LED

The green LED is the "Signal Present" LED. If the green LED is lit, the radiator is outputting an IR signal into the room. During normal operation the red and green LEDs will be on simultaneously (unless defeated by SWI)



LA-140 – Mounting your Radiator

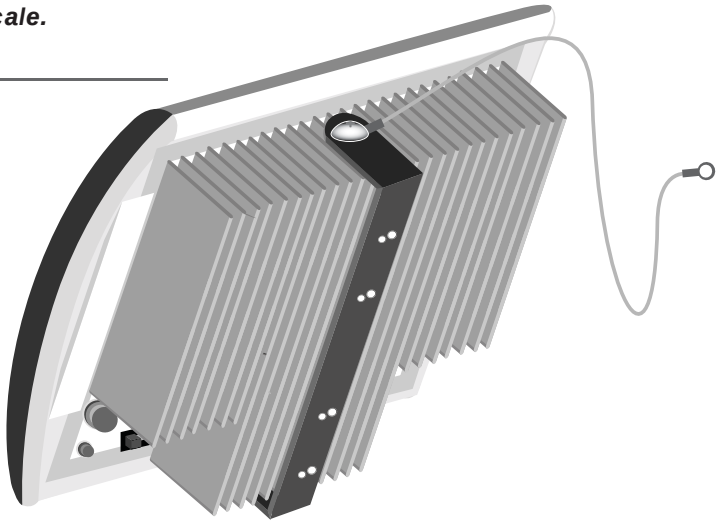
Overview

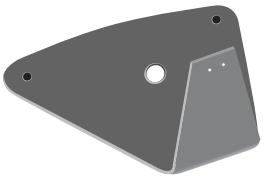
There are several different configurations that the radiator can be mounted in. All of them except for the "Dual Radiator Mounting Configurations" can be accomplished using the mounting hardware included with the LA-140 IR Radiator Kit (the LA-342 Dual Mounting Bracket is not included with the kit but is required for mounting two radiators side-by-side). Read through the following mounting strategies to determine which works best for your application and then follow the instructions for mounting.

NOTE: The parts in this section are not shown to scale.

Mounting Hardware Pieces

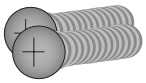
Wall Box Plate
Universal Bracket
Tilt Arm "A"
Tilt Arm "B"
Tilt Bolt
Corner Mount Bracket
Universal Stand Nut
Wall Box Plate Mounting Screws (2)
Hollow Wall Anchors with Screws (3 of each)
Mounting Hardware Screws (10)
Security Cable (attached to radiator)



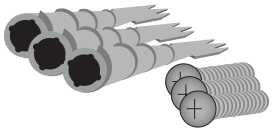


Universal Bracket

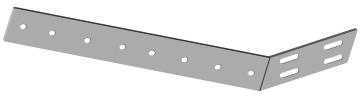
Tilt Bolt



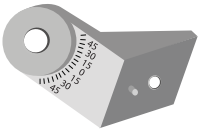
Wall Box Plate Mounting Screws



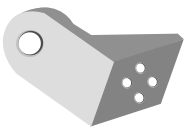
Hollow Wall Anchors with Screws



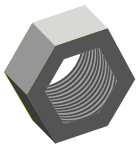
Corner Mount Bracket



Tilt Arm "A"

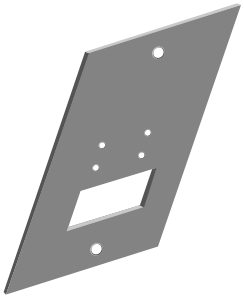


Tilt Arm "B"



Universal Stand Nut

Mounting Hardware Screws



Wall Box Plate

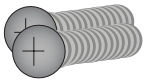
Wall Box Mounting

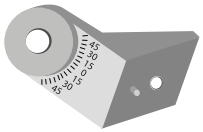
The wall box mount is a preferred mounting option for the LA-140 IR Radiator. The wall box mount allows secure mounting of the radiator as well as for allowing the necessary cables to be placed inside the wall.

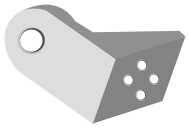
Pieces Used:
- Wall Box Plate
- Mounting Hardware Screws
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt
- Mounting Hardware Screws

Wall Box Plate

Tilt Bolt


Wall Box Plate Mounting Screws


Tilt Arm "A"

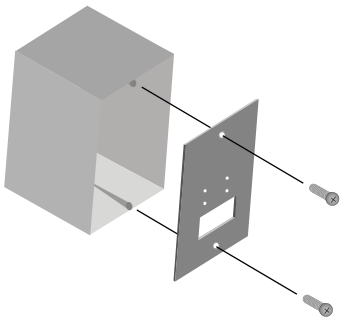

Tilt Arm "B"

Mounting Hardware Screws

Installation Steps

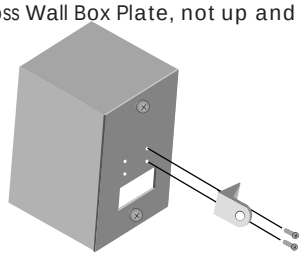
1 ***Screw Wall Box Plate to wall***

Screw Wall Box Plate to wall box using included Mounting Hardware Screws.



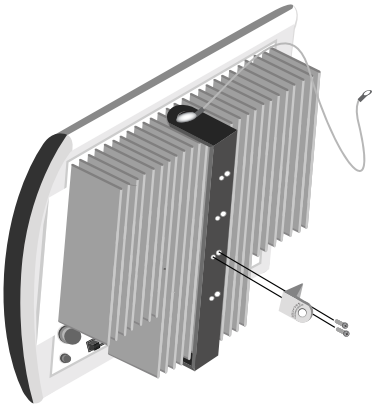
2 ***Attach Tilt Arm "A"***

Attach Tilt Arm "A" to Wall Box Plate using included Mounting Hardware Screws. Attach Tilt Arm "A" in such a manner that it sits across Wall Box Plate, not up and down on plate.



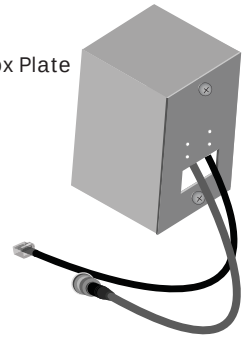
3 ***Attach Tilt Arm "B"***

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included Mounting Hardware Screws. Any of the five holes in Swing Arm can be used for this.



4 *Pull CAT-5 and Coaxial cables through (if necessary)*

Pull CAT-5 and Coaxial cables through hole in Wall Box Plate



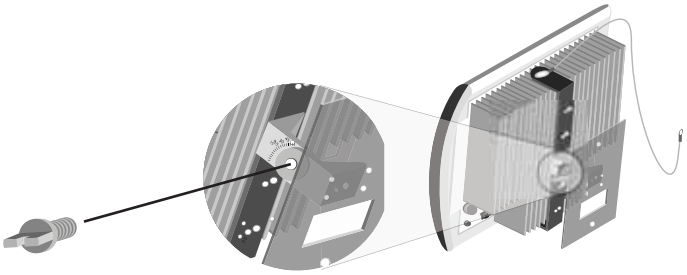
5 *Determine correct angle*

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

6 *Attach Radiator to Wall Box Plate*

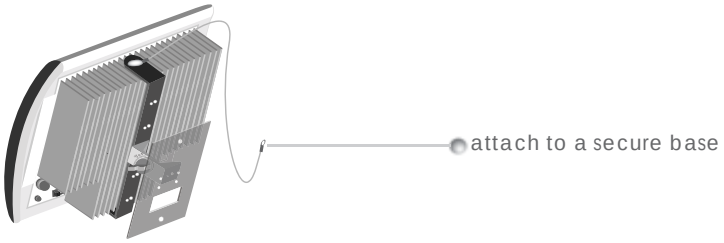
Attach Radiator to Wall Box Plate using Tilt Arm "A" and Tilt Arm "B". Use the Tilt Bolt to fasten the tilt arms together.

Attention: Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.



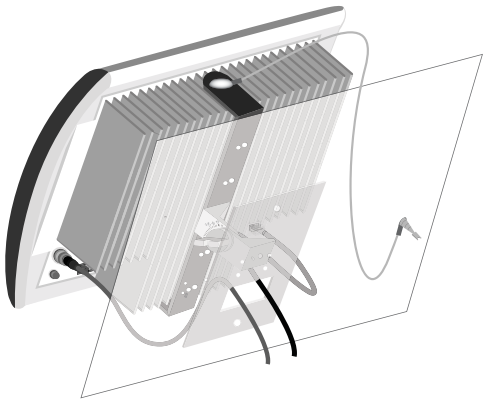
7 *Attach Safety Mounting Cable*

The radiator has a safety cable attached to the top of the swing arm. This cable must be attached to a secure base to prevent the radiator from falling in the event of a mounting hardware component failing. Possible injury to persons and damage to the radiator is prevented by securely attaching this cable to a base.



8 *Connect CAT-5 and Coaxial cables*

Connect CAT-5 and Coaxial cables to appropriate locations on radiator.



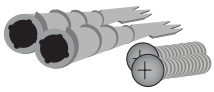
Hollow Wall Mounting

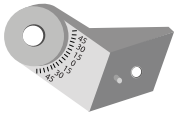
A hollow wall installation is not as preferrable as a wall box installation but can be done without problems. The hollow wall installation still requires the Wall Box Plate to be used.

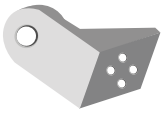
Pieces Used:
- Wall Box Plate
- Hollow Wall Mounting Screws
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt
- Mounting Hardware Screws

Wall Box Plate

Tilt Bolt


Hollow Wall Anchors with Screws


Tilt Arm "A"


Tilt Arm "B"

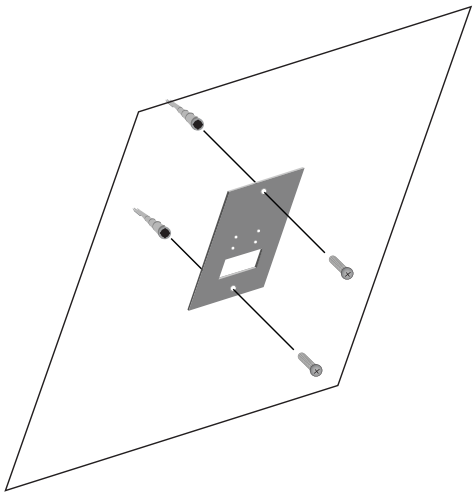
Mounting Hardware Screws

Installation Steps

1 Fasten Wall Box Plate to wall

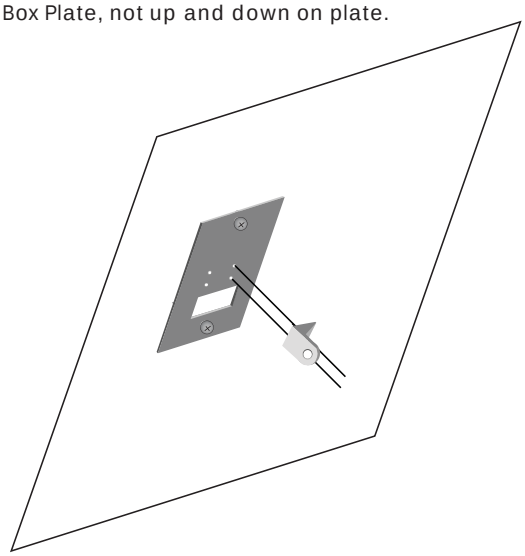
Fasten Wall Box Plate securely to wall using Hollow Wall Mounting Screws.

NOTE: The Wall Box Plate must be used in this installation to provide a secure base for the radiator to be mounted on.



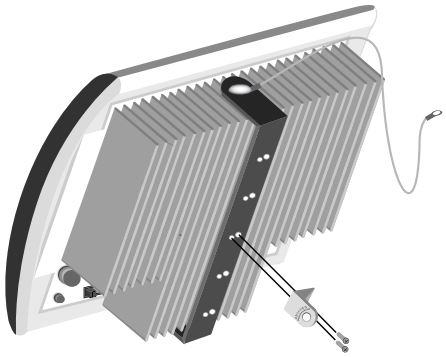
2 Attach Tilt Arm "A"

Attach Tilt Arm "A" to Wall Box Plate using included Mounting Hardware Screws. Attach Tilt Arm "A" in such a manner that it sits across Wall Box Plate, not up and down on plate.



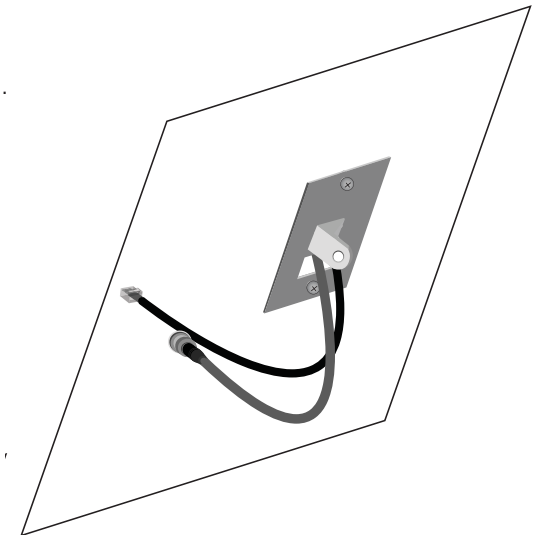
3 *Attach Tilt Arm "B"*

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included Mounting Hardware Screws. Any of the five holes in Swing Arm can be used for this.



4 *Pull CAT-5 and Coaxial cables through (if necessary)*

Pull CAT-5 and Coaxial cables through hole in Wall Box Plate.



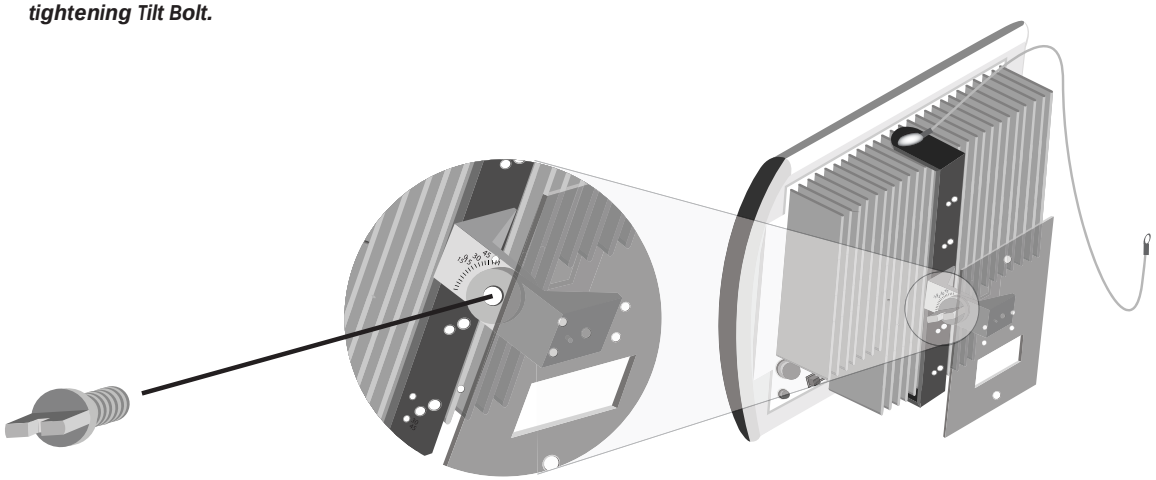
5 *Determine correct angle*

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

6 *Attach Radiator to Wall Box Plate*

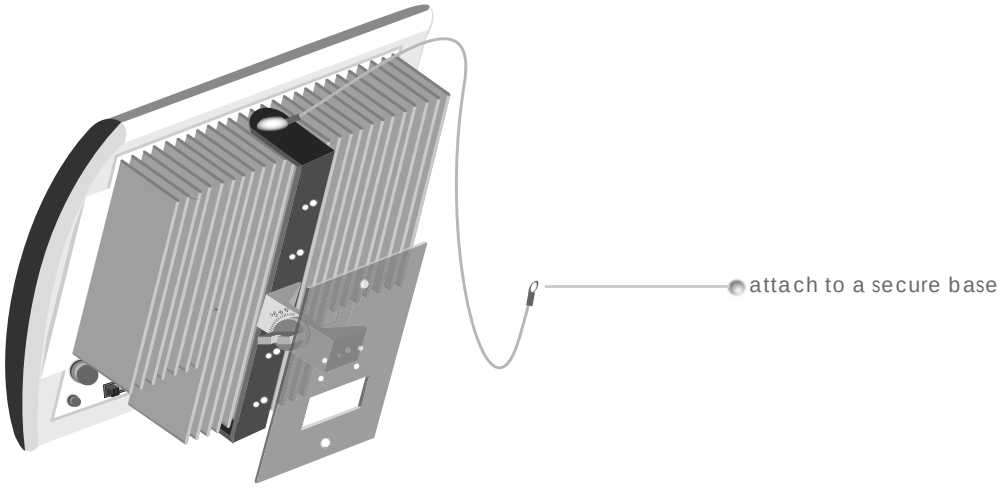
Attach Radiator to Wall Box Plate using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together.

Attention: Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.



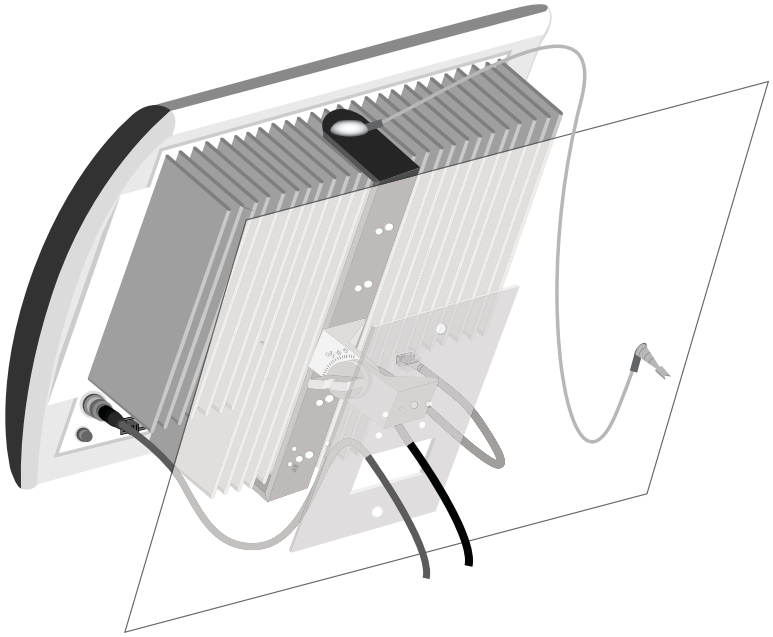
7 *Attach Safety Mounting Cable*

The radiator has a safety cable attached to the top of the swing arm. This cable must be attached to a secure base to prevent the radiator from falling in the event of a mounting hardware component failing. Possible injury to persons and damage to the radiator is prevented by securely attaching this cable to a base.



8 *Connect CAT-5 and Coaxial cables*

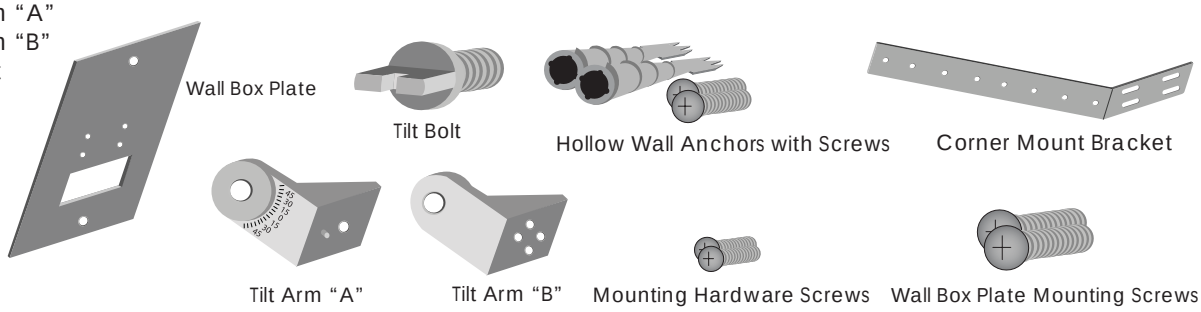
Connect CAT-5 and Coaxial cables to appropriate locations on radiator.



Corner Mounting

The radiator is mounted in the corner of a room with or without a wall box available for this use. A wall box must be at least four inches from the corner if using for this install.

Pieces Used:
- Wall Box Plate
- Mounting Hardware Screws (if attaching to wall box)
- Hollow Wall Anchors with Screws (if attaching to hollow wall)
- Corner Mount Bracket
- Mounting Hardware Screws
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt



Installation Steps

1 ***Fasten Wall Box Plate to wall***

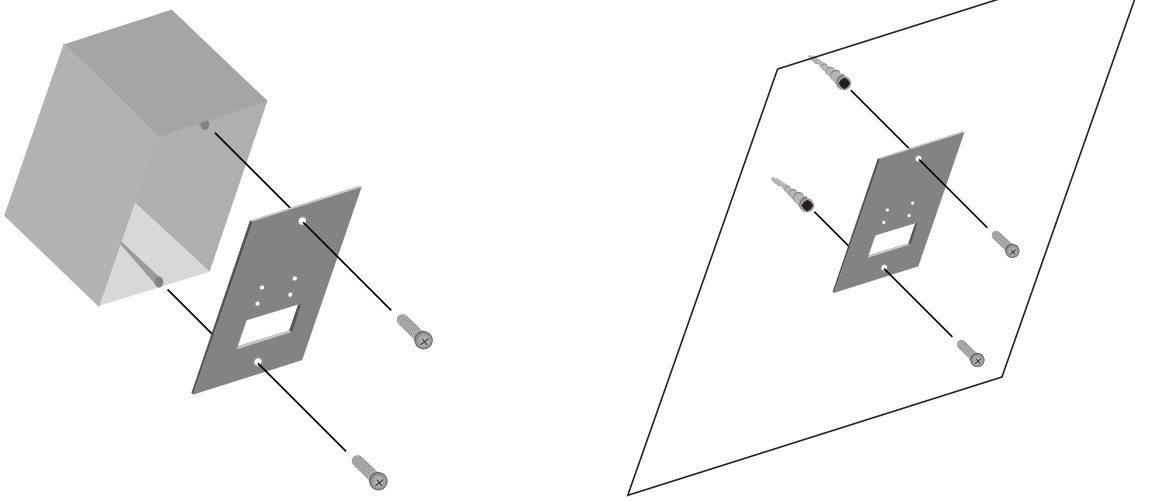
Attach Wall Box Plate securely to wall.

IMPORTANT: Wall Box Plate must be at least four inches from corner to ensure corner bracket will fit in corner.

1A If using a wall box (wall box must be four inches from corner), attach Wall Box Plate to wall box using included Mounting Hardware Screws.

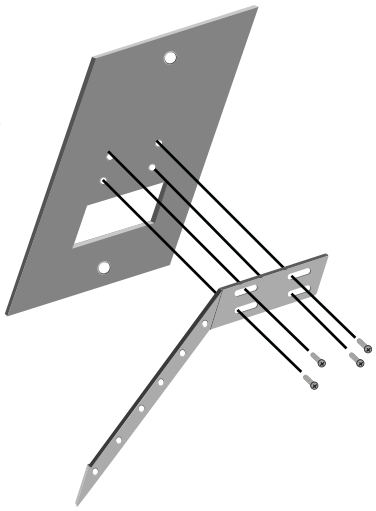
1B If attaching directly to a hollow wall (Wall Box Plate must be installed four inches from corner), attach Wall Box Plate securely to wall using included Hollow Wall Mounting Screws.

NOTE: The Wall Box Plate must be used in this installation to provide a secure base for the radiator to be mounted on.



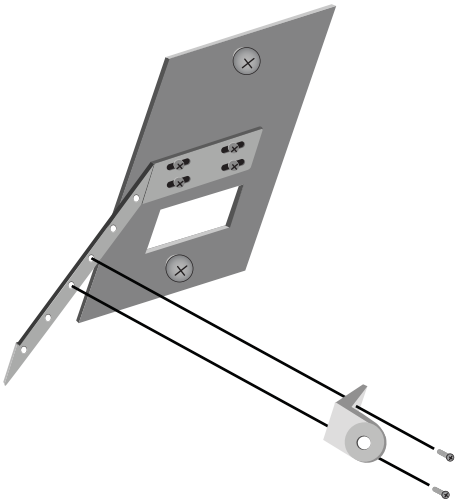
2 *Attach Corner Mount Bracket*

Attach Corner Mount Bracket to Wall Box Plate using included Mounting Harware Screws. Use all four available holes to ensure a secure attachment.



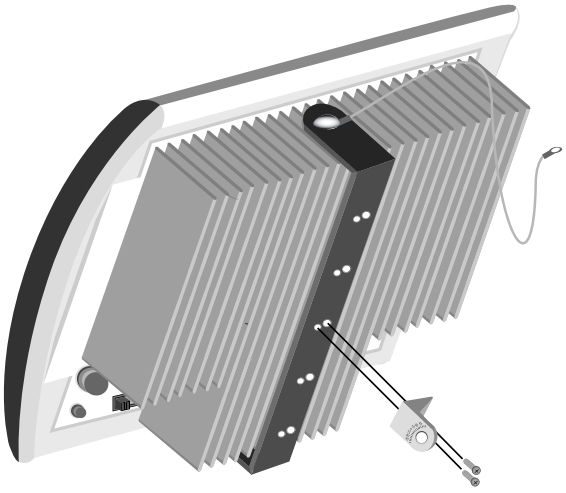
3 *Attach Tilt Arm "A"*

Attach Tilt Arm "A" to Corner Mount Bracket. Determine correct placement of Tilt Arm "A" by holding Radiator up to Corner Mount Bracket and determining desired position in corner.



4 *Attach Tilt Arm "B"*

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included Mounting Hardware Screws. Any of the five holes in Swing Arm can be used for this connection.



5 ***Pull CAT-5 and Coaxial cables through***

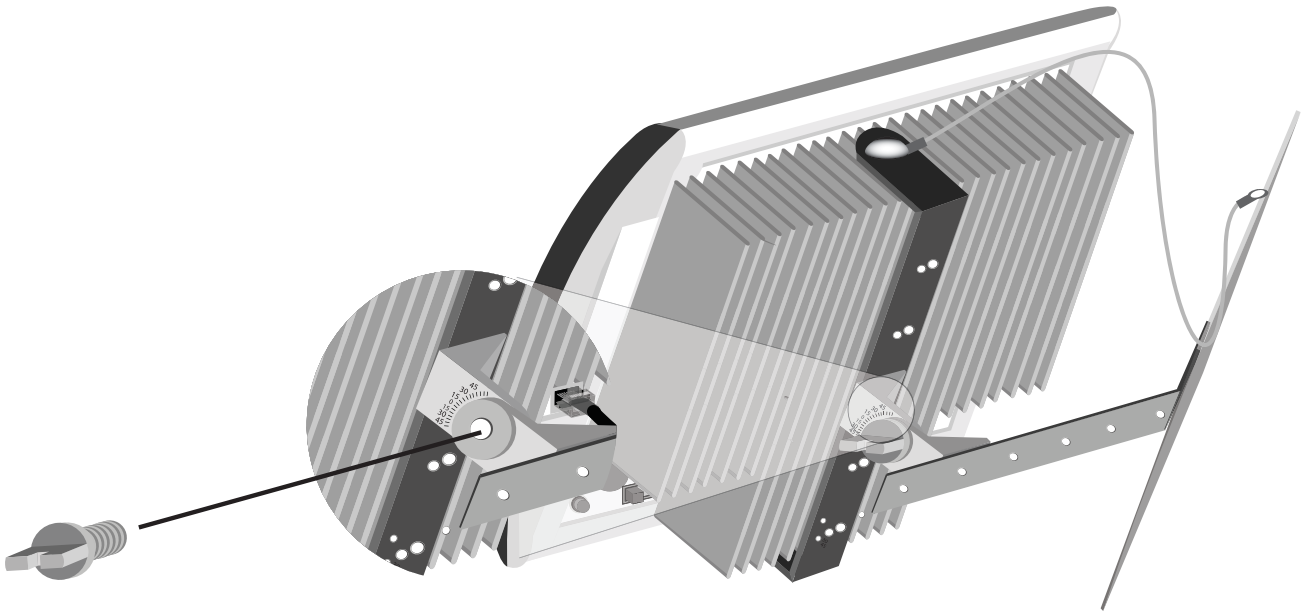
Pull CAT-5 and Coaxial cables through hole in Wall Box Plate (if necessary).

6 ***Determine correct angle***

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

7 ***Attach Radiator to Corner Mount Bracket***

Attach Radiator to Corner Mount Bracket using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together. Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.

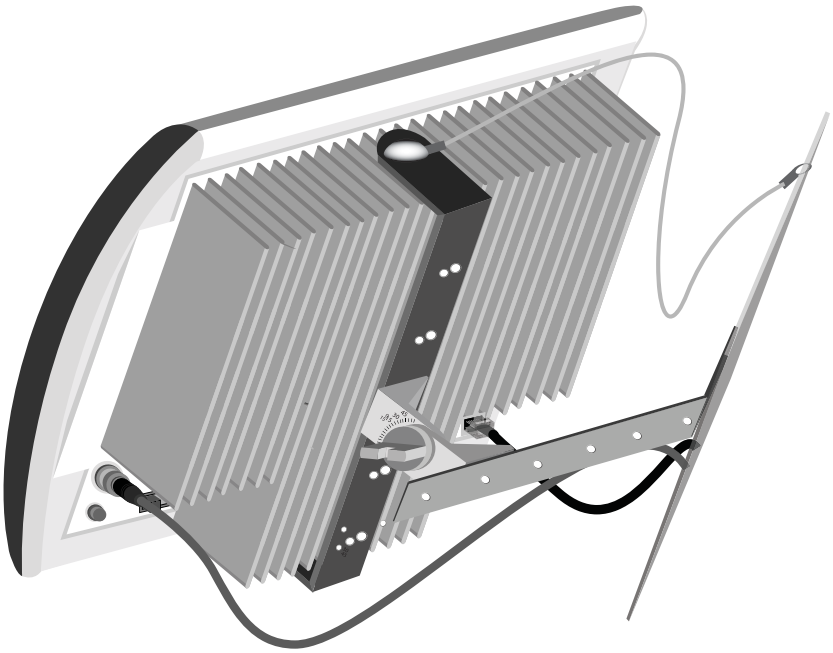


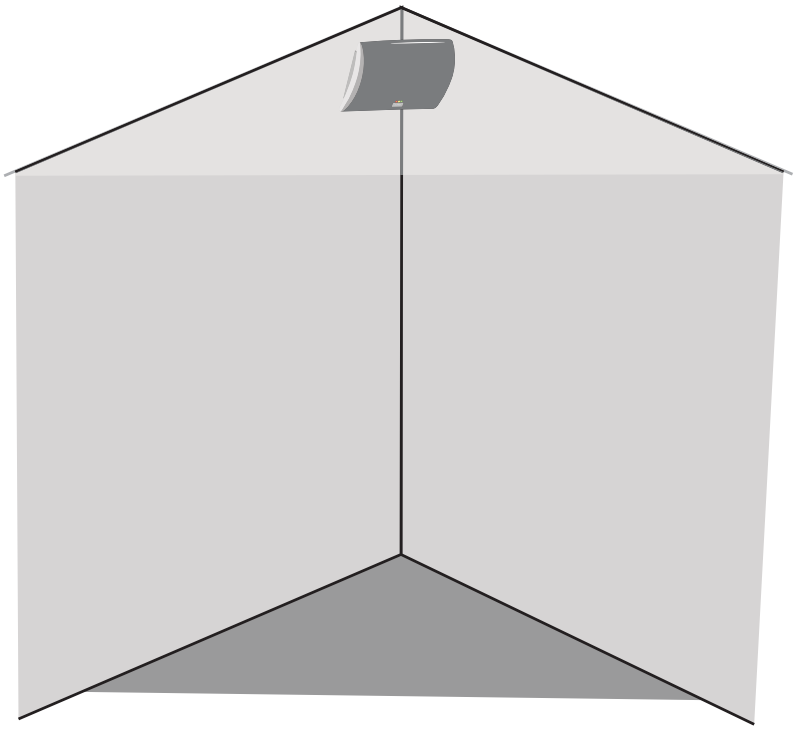
7 *Attach Safety Mounting Cable*

The radiator has a safety cable attached to the top of the swing arm. This cable must be attached to a secure base to prevent the radiator from falling in the event of a mounting hardware component failing. Possible injury to persons and damage to the radiator is prevented by securely attaching this cable to a base.

9 *Connect CAT-5 and Coaxial cables*

Connect CAT-5 and Coaxial cables to appropriate locations on radiator.

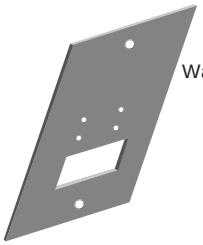




Ceiling Mounting

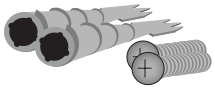
Description: Radiator is mounted on the ceiling with or without a wall box available for this use.

Pieces Used:
- Wall Box Plate
- Hollow Wall Mounting Screws (if attaching to wall box) or
  Hollow Wall Anchors with Screws (if attached to hollow wall)
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt
- Mounting Hardware Screws

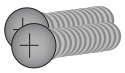

Wall Box Plate

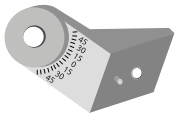
Tilt Bolt

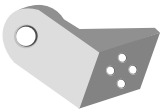
Anchors with


Hollow Wall Anchors with Screws

or


Wall Box Plate Mounting Screws


Tilt Arm "A"


Tilt Arm "B"

Mounting Hardware Screws

Installation Steps

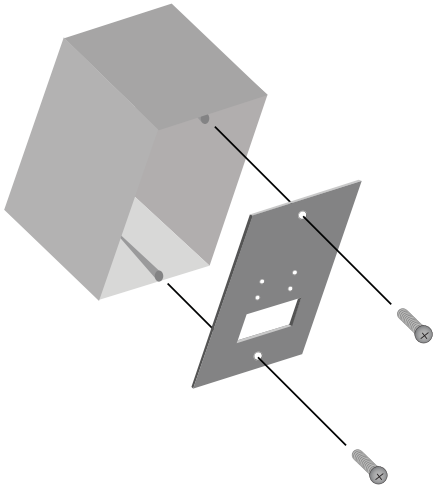
1 ***Attach Wall Box Plate securely to ceiling***

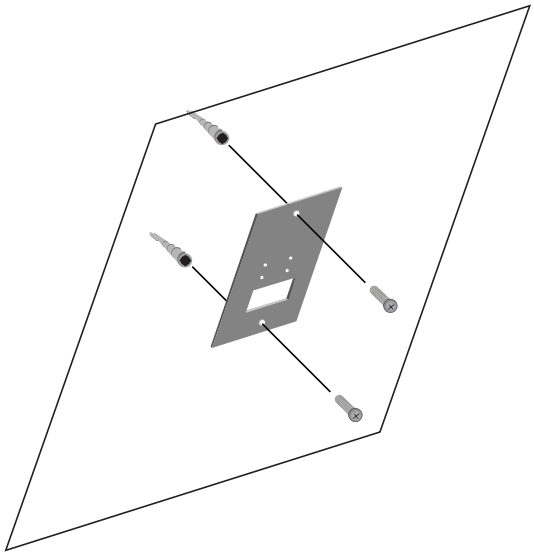
Attach Wall Box Plate securely to ceiling.

1A If using a wall box, attach Wall Box Plate to wall box using included Mounting Hardware Screws

1B If attaching directly to a hollow ceiling, attach Wall Box Plate securely to ceiling using included Hollow Wall Anchors with Screws.

NOTE: The Wall Box Plate must be used in this installation to provide a secure base for the radiator to be mounted on.

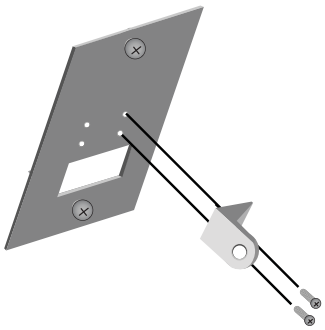




LA-140 – Mounting your Radiator

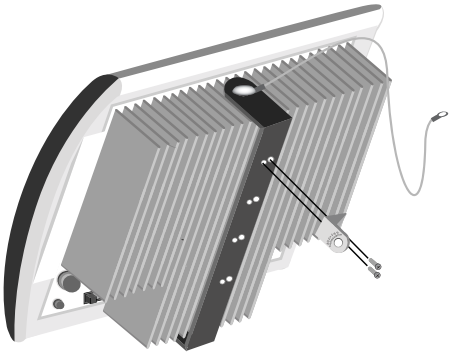
2 ***Attach Tilt Arm "A"***

Attach Tilt Arm "A" to Wall Box Plate. Attach Tilt Arm "A" in such a manner that it sits across Wall Box Plate using Mounting Hardware Screws, not up and down on plate.



3 ***Attach Tilt Arm "B"***

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included Mounting Hardware Screws. The top hole in the radiator swing arm must be used using included mounting hardware screws in this install.



4 ***Pull CAT-5 and Coaxial cables through (if necessary)***

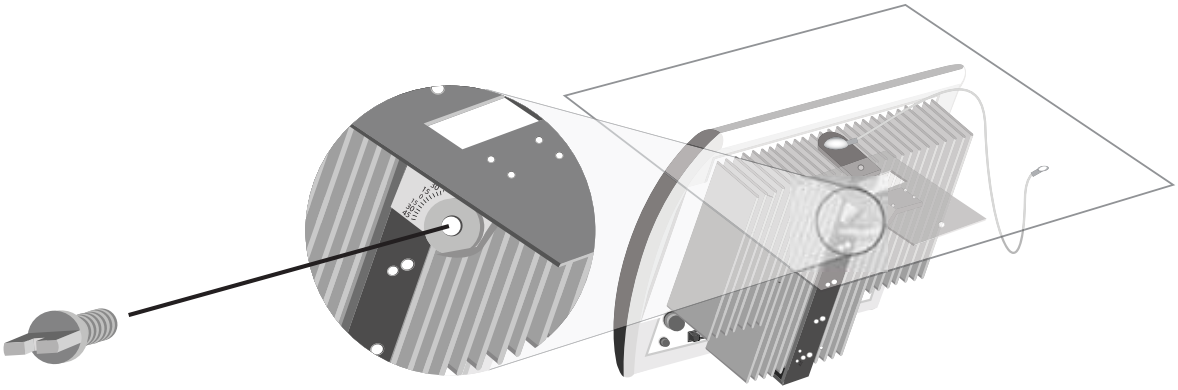
Pull CAT-5 and Coaxial cables through hole in Wall Box Plate.

5 ***Determine correct angle***

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

6 *Attach Radiator to Wall Box Plate using Tilt Arm "A" and Tilt Arm "B"*

Attach Radiator to Wall Box Plate using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together. Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.

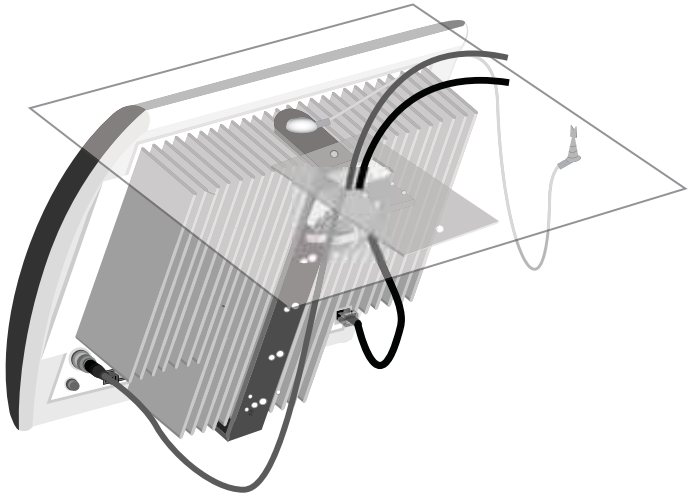


7 *Attach Safety Mounting Cable*

The radiator has a safety cable attached to the top of the swing arm. This cable must be attached to a secure base to prevent the radiator from falling in the event of a mounting hardware component failing. Possible injury to persons and damage to the radiator is prevented by securely attaching this cable to a base.

8 *Connect CAT-5 and Coaxial cables*

Connect CAT-5 and Coaxial cables to appropriate locations on radiator.

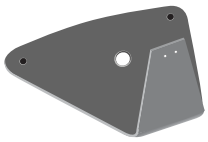


LA-140 – Mounting your Radiator

Desk/Table Mounting

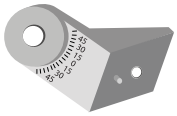
Radiator is mounted to a support bracket that can be set on any flat surface. This is a flexible and non-permanent mounting strategy.

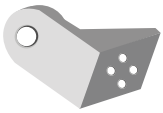
Pieces Used:
- Universal Bracket
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt
- Mounting Hardware Screws


Universal Bracket

Tilt Bolt

Mounting Hardware Screws

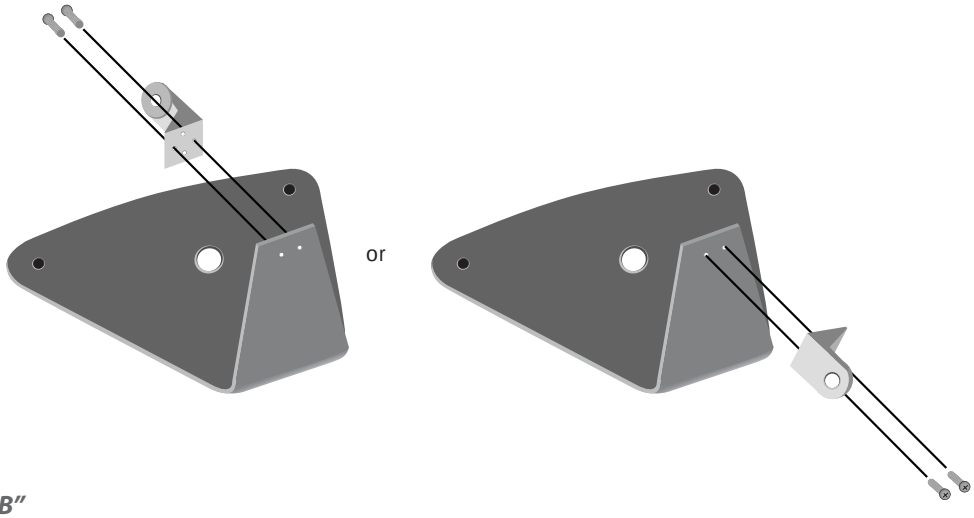

Tilt Arm "A"


Tilt Arm "B"

Installation Steps

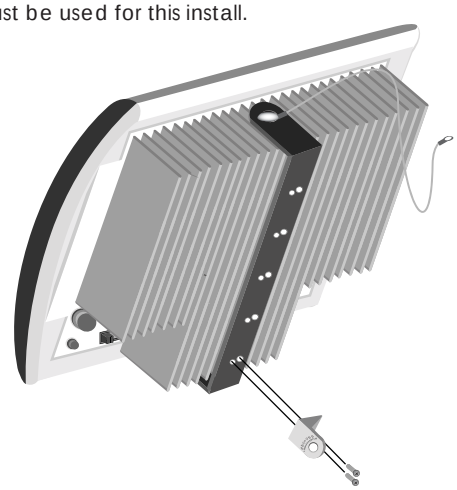
1 ***Attach Tilt Arm "A"***

Attach Tilt Arm "A" to Universal Bracket using included Mounting Hardware Screws. Tilt Arm "A" can be attached to either side of the Universal Barcket.


or

2 ***Attach Tilt Arm "B"***

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using Mounting Harware Screws. The bottom hole in Swing Arm must be used for this install.



LA-140 – Mounting your Radiator

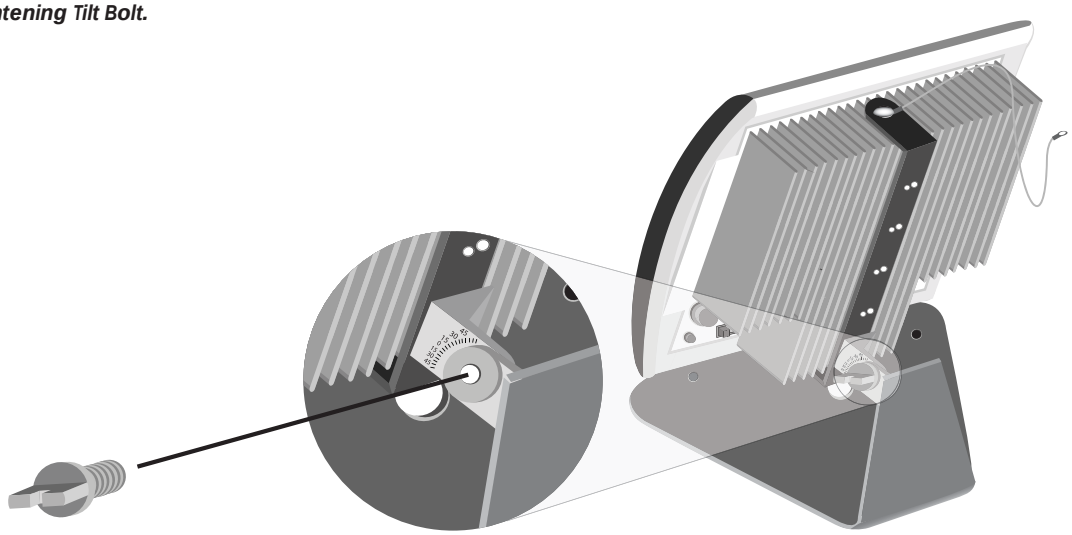
3 Determine correct angle

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

4 Attach Radiator to Desk/Mic Stand

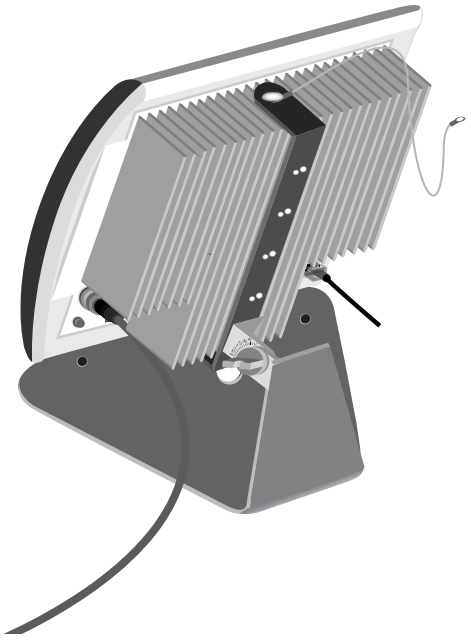
Attach Radiator to Desk/Mic Stand using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together.

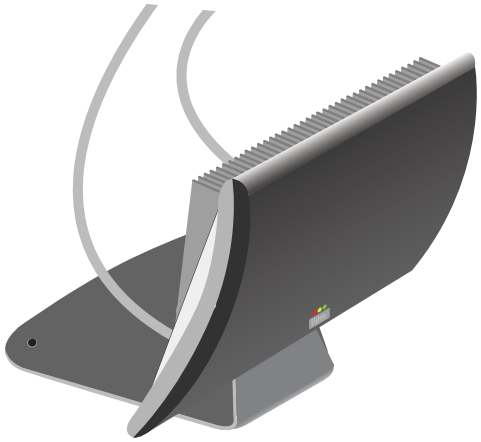
Attention: Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.



5 Connect CAT-5 and Coaxial cables

Connect CAT-5 and Coaxial cables to appropriate locations on radiator.

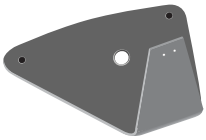




Microphone Stand Mounting

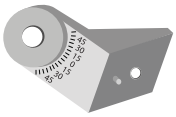
Radiator is mounted on a standard microphone stand.

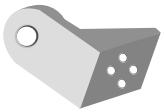
Pieces Used:
- Universal Bracket
- Universal Stand Nut
- Tilt Arm “A”
- Tilt Arm “B”
- Tilt Bolt


Universal Bracket

Tilt Bolt

Universal Stand Nut


Tilt Arm “A”

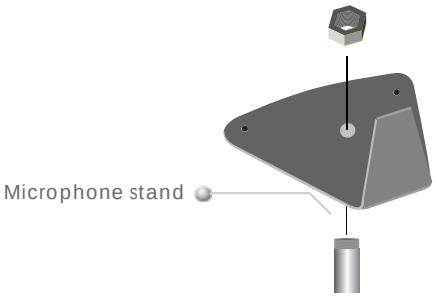

Tilt Arm “B”

Mounting Hardware Screws

Installation Steps

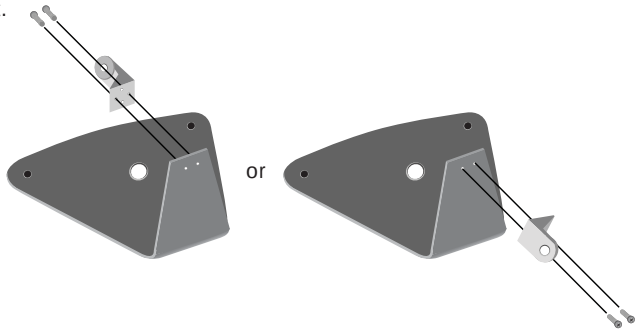
1 ***Attach Universal Bracket to Mic Stand***

Attach Universal Bracket to Mic Stand using Universal Stand Nut.



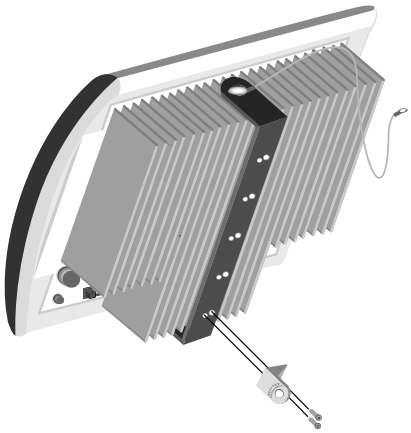
2 ***Attach Tilt Arm “A”***

Attach Tilt Arm “A” to Universal Bracket using included Mounting Hardware Screws. Tilt Arm “A” can be attached to either side of the Universal Barcket.



3 ***Attach Tilt Arm “B”***

Attach Tilt Arm “B” to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included Mounting Hardware Screws. The bottom hole in Swing Arm must be used for this install.



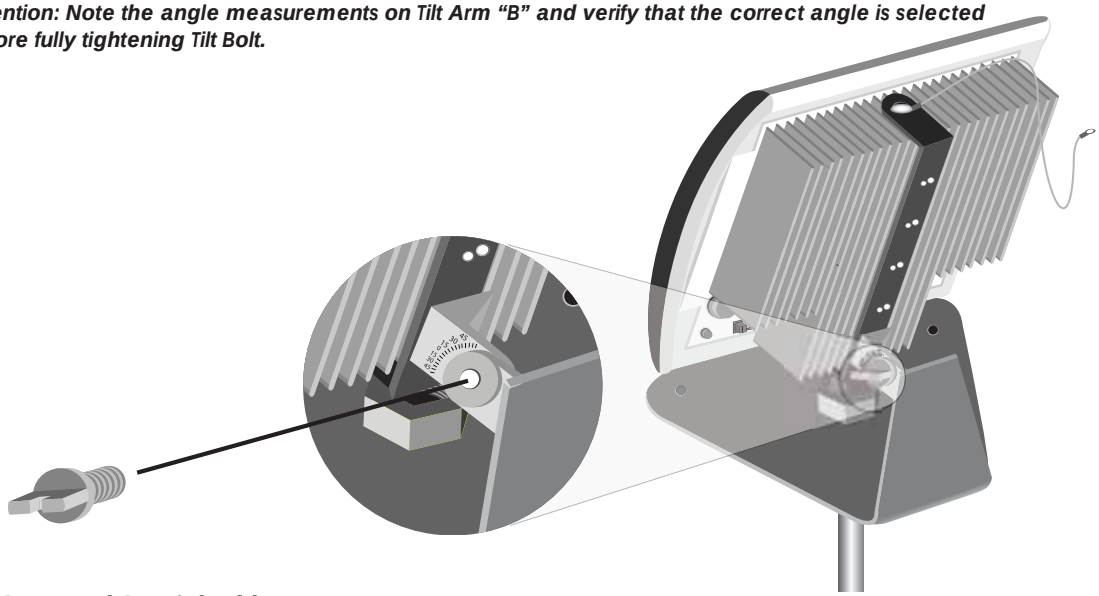
4 Determine correct angle setting

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

5 Attach Radiator to Desk/Mic Stand

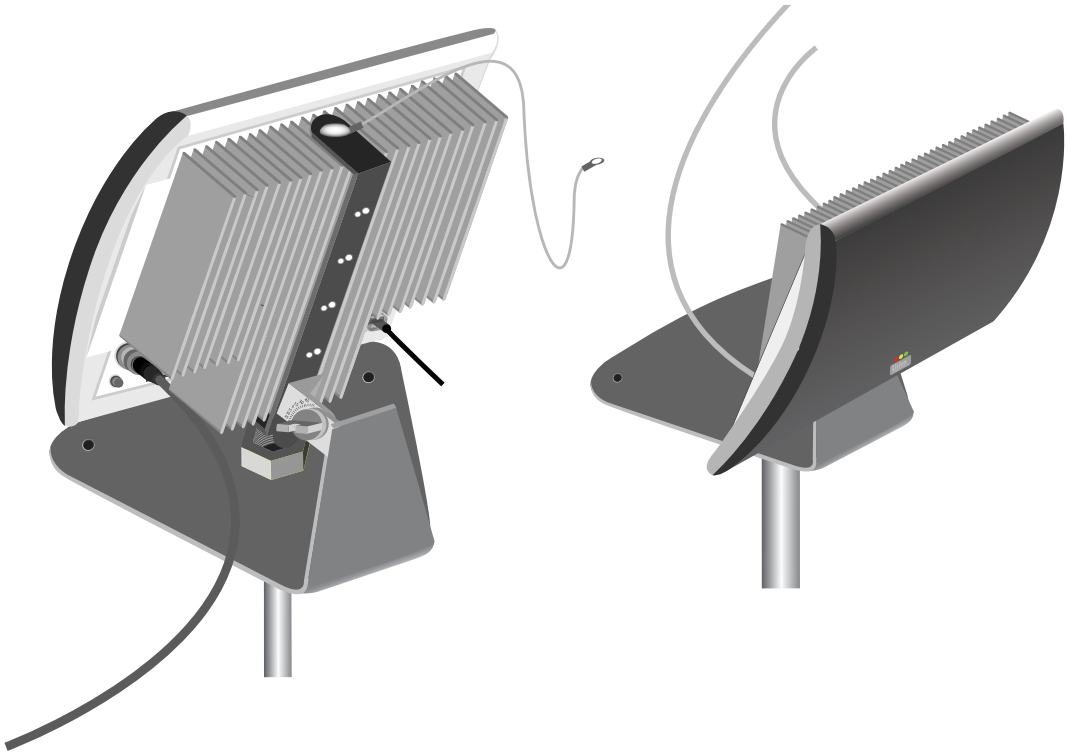
Attach Radiator to Desk/Mic Stand using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together.

Attention: Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.



5 Connect CAT-5 and Coaxial cables

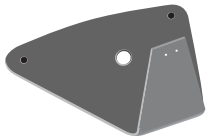
Connect CAT-5 and Coaxial cables to appropriate locations on radiator.



Tripod Stand Mounting

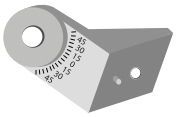
Radiator is mounted on a tripod stand. If Listen part number LA-337 is used the radiator can be mounted up to nine feet high.

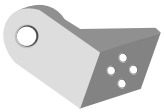
Pieces Used:
- Universal Stand Nut
- Universal Bracket
- Tilt Arm "A"
- Tilt Arm "B"
- Tilt Bolt
- Mounting Hardware Screws


Universal Bracket

Tilt Bolt

Universal Stand Nut


Tilt Arm "A"

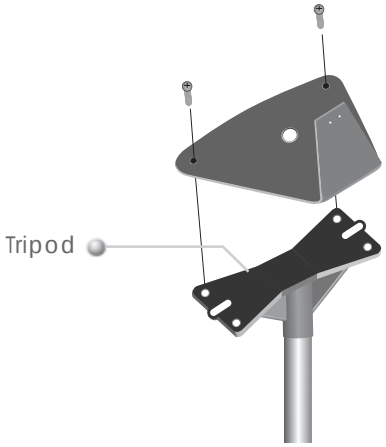

Tilt Arm "B"

Mounting Hardware Screws

Installation Steps

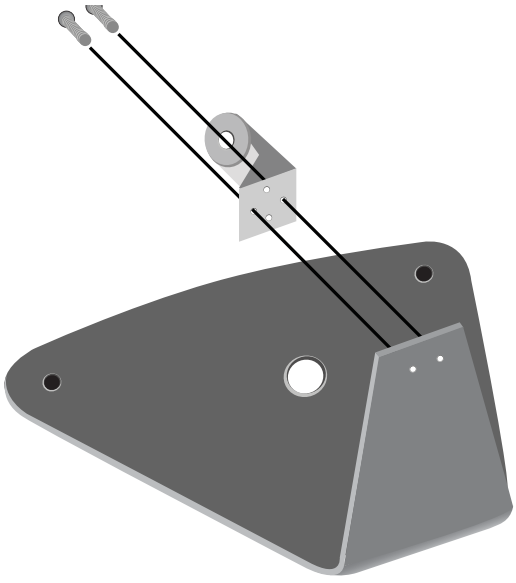
1 ***Attach Universal Bracket to tripod stand***

Attach Universal Bracket to LA-337 tripod stand using equipment included in LA-337



2 ***Attach Tilt Arm "A"***

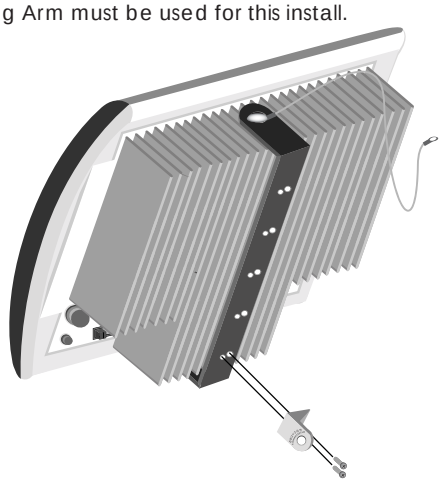
Attach Tilt Arm "A" to Universal Bracket using included mounting hardware screws.



LA-140 – Mounting your Radiator

3 Attach Tilt Arm "B"

Attach Tilt Arm "B" to Swing Arm of radiator (swing arm comes attached to rear of radiator) using included mounting hardware screws. The bottom hole in Swing Arm must be used for this install.



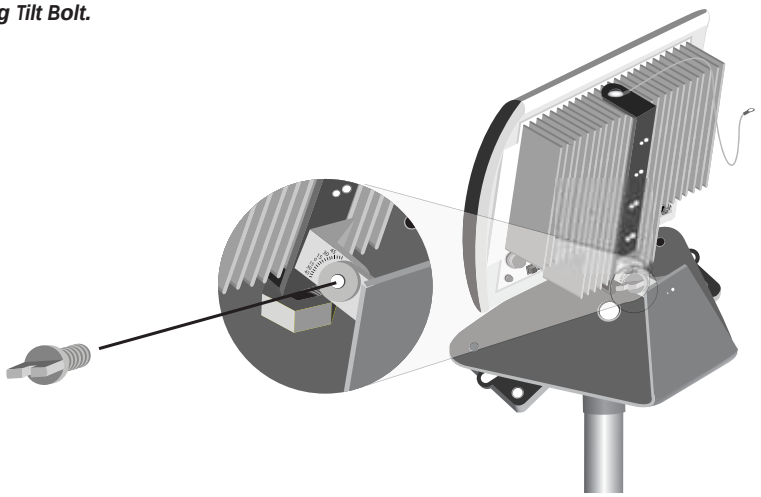
4 Determine correct angle

Determine correct angle setting to use for the radiator using the design guide, see page 13 of design guide.

5 Attach Radiator to Desk/Mic Stand

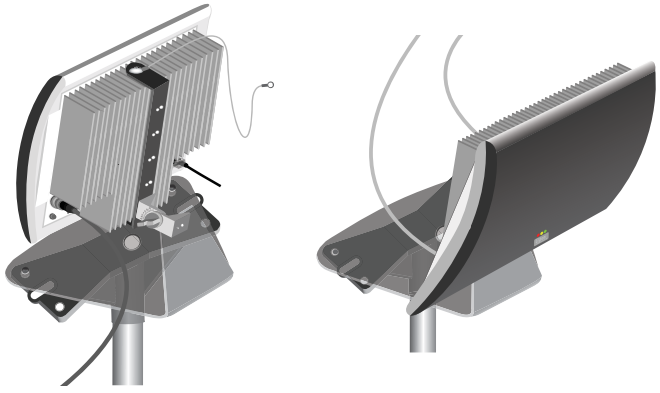
Attach Radiator to Desk/Mic Stand using Tilt Arm "A" and Tilt Arm "B." Use the Tilt Bolt to fasten the tilt arms together.

Attention: Note the angle measurements on Tilt Arm "B" and verify that the correct angle is selected before fully tightening Tilt Bolt.



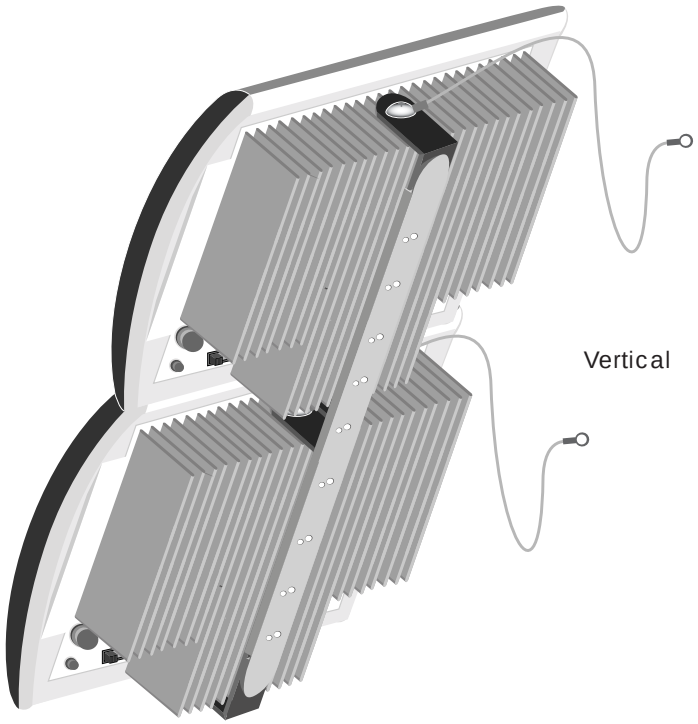
6 Connect CAT-5 and Coaxial cables

Connect CAT-5 and Coaxial cables to appropriate locations on radiator.

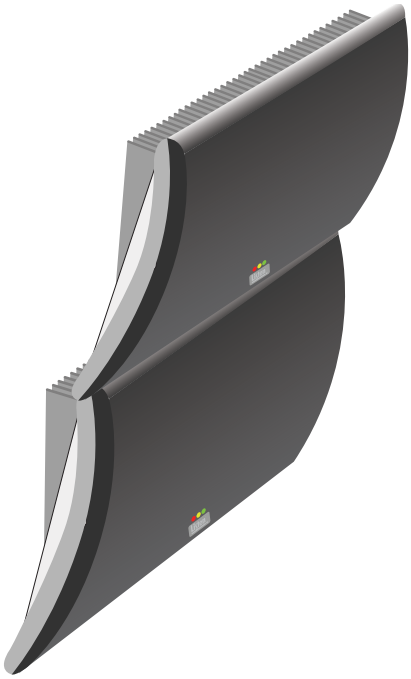


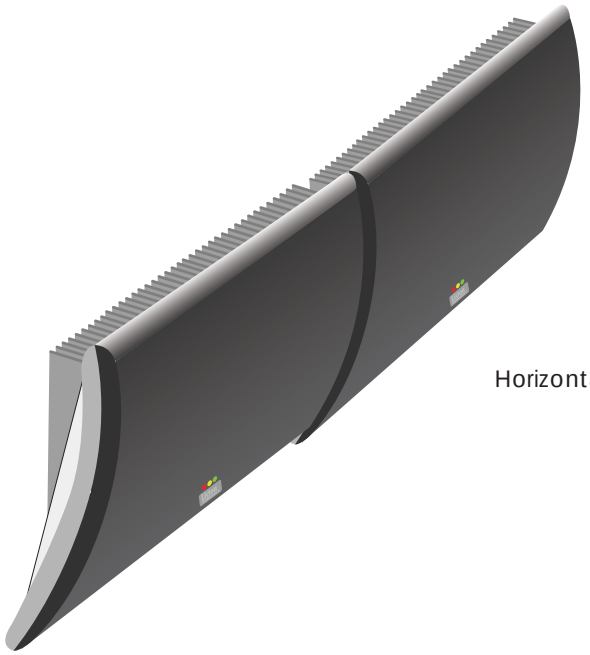
Dual Radiator Mounting

It is possible to mount two Listen LA-140 Radiators either side by side or on top of each other using the LA-342 Dual Radiator Mounting Bracket (sold separately). The mounting strategy is very similar to all of the above scenerios except you will be working with two radiators connected together. The instructions for connecting two radiators together with the LA-342 bracket are included with the bracket. After the two radiators are connected together all of the above instructions are the same except when the above instructions say to 'attach tilt arm "B" to the radiator' you will instead attach tilt arm "B" to the dual mounting bracket.

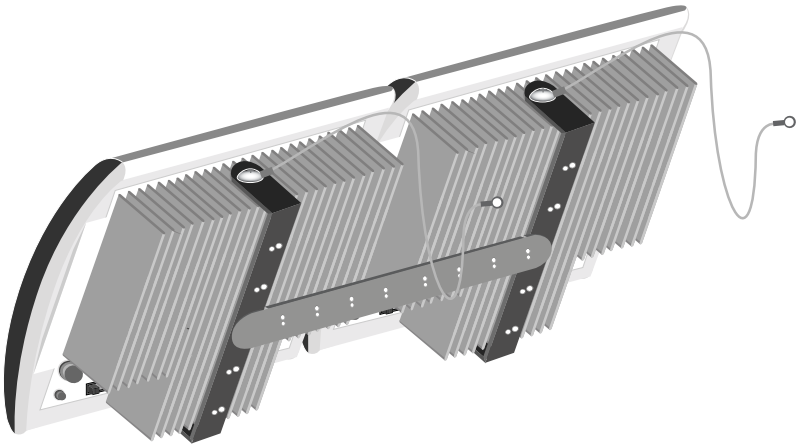


Vertical





Horizontal



Accessories for LA-140

Accessories

LA-205
IR Extended Power Supply
(powers two LA-140 radiators)
Note: You will only need the LA-205 if you are using more than two LA-140 radiators per LT-82 transmitter or if you wish to remote power the radiator(s).

LA-342
IR Dual Radiator Mounting Bracket
(for mounting two radiators vertically or horizontally)
-includes RG-58 coaxial cable and CAT-5 cable to interconnect the two radiators

LA-70
CAT-5 Cable
specify length

LA-112
RG-58 50 Ohm Coaxial Cable
specify length

LA-115
RG-58 BNC to
BNC Coupler

LA-127
RG-58 BNC Connector

LA-391
RG-58/50 Ohm Coaxial Cable
preassembled, specify length

LA-71
RJ-45 CAT-5 Connector
(Pkg. of 10)

LA-72
RJ-45 to RJ-45 CAT-5 Coupler

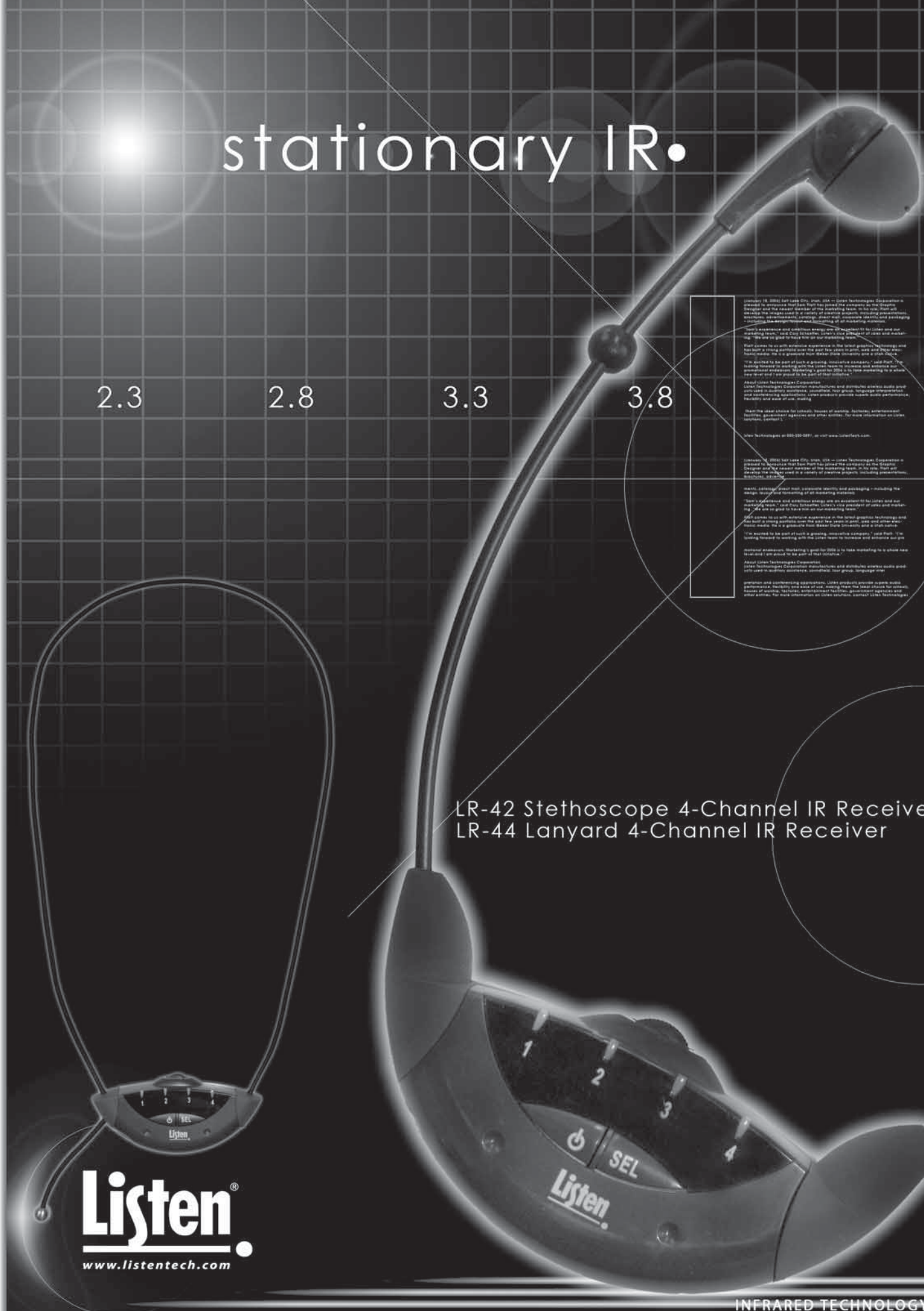
LA-393
RJ-45/CAT-5
preassembled, specify length

Notes

Notes

stationary IR•

2.3 2.8 3.3 3.8



LR-42 Stethoscope 4-Channel IR Receive
LR-44 Lanyard 4-Channel IR Receiver

Listen®

www.listentech.com

INFRARED TECHNOLOGY

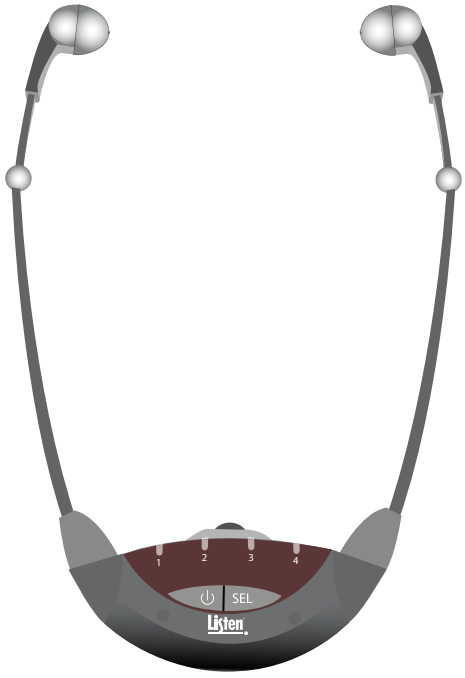
LR-42/44 User's Manual Table of Contents

LR-42/LR-44 4-Channel IR Receivers

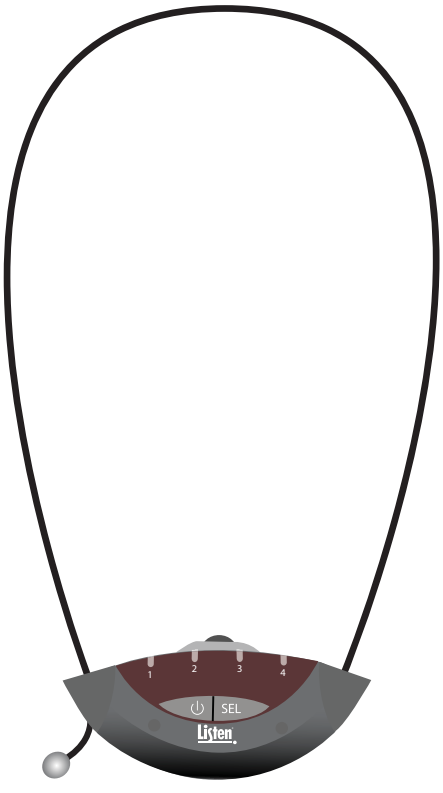
Specifications	87
LR-42 Quick Reference Page	89
LR-44 Quick Reference Page	90
Setup Instructions	91
Operating Instructions	95
Locking Instructions	101
Programming Instructions	102
Programming Examples	107
Programmable Features Detailed Descriptions	110
Battery Charging Information	111
Accessories for LR-42/LR-44	115

LR-42/44 Package Contents

- LR-42 IR Stethoscope 4-Channel Receiver (or)
  LR-44 IR Lanyard 4-Channel Receiver
- Quick Reference Card



LR-42



LR-44

Listen Part Number

- LR-42
- LR-44

LR-42 IR Stethoscope Receiver Specifications

Architectural Specification

The IR stethoscope receiver shall be capable of receiving on four carriers (2.3, 2.8, 3.3, 3.8 MHz) and the channel shall be displayed on one of four front panel LEDs. The receiver shall be capable of being locked on a channel. The receiver shall be capable of receiving a stereo signal on each of the four carriers. The receiver shall have a SNR of 60 db or greater and have built in squelch control. The device shall have an audio frequency response of 63 Hz to 15 kHz, +/- 3db and shall have distortion of less than 2%. The device shall operate for 30 hours with two AAA alkaline batteries and 15 hours with two AAA NiMH rechargeable batteries. The receiver shall be covered by a limited lifetime warranty. The LR-42 is specified.

	Specifications	LR-42
RF	Carrier Frequencies	Selectable: 2.3 MHz, 2.8 MHz, 3.3 MHz, 3.8 MHz
	Number of Channels	Four (4) selectable channels
	IR Detectors	Two (2) detectors under front IR lens
	Sensitivity	One (1) nW/cm2 at 40 db SNR
	Frequency Accuracy	+/- .005% stability 0 to 50C
	Squelch	Automatic on loss of RF signal (40 db SNR)
	Compliance	FCC Part 15, Industry Canada, CE, RoHS
Audio	** All system specifications are wireless end-to-end	
	System Frequency Response	63Hz - 15kHz (+/- 3dB)
	System Signal to Noise Ratio (A-weighted)	Mono: >60dB
		Stereo: >52dB
	System Distortion	<2% total harmonic distortion (THD)
	Audio Output Jacks	3.5 mm connector unbalanced, mono or stereo headphones
	Audio Output Power	20 mW maximum at 32 ohms
Controls	User Controls	Volume, Power, Channel Select
	Programming	Channel Lock, Auto Seek, Channel Lock-Out, Squelch
Indicators	Unit Power	Indicated by current channel selection LED
	Channel Selection	Red LED illuminates on the current channel selection
Power	Battery Type	Two (2) AAA alkaline batteries or NiMH battery pack
	Battery Life	30 hours alkaline, 15 hours NiMH rechargeable pack (LA-364)
	Battery Charging	Fully Automatic with NiMH battery pack and LA-350 charger
Physical	Dimensions (H x W x D)	1.8 x 4.0 x .75 in (46x102x19 mm) Stethoscope Arm length 8 in (203 mm)
	Color	Grey with White Silk Screening
	Unit Weight without batteries	1.75 ounces (49 grams)
	Unit Weight with batteries	2.55 ounces (74 grams)
	Shipping Weight	8 ounces (227 grams)
Environmental	Temperature - Operation	-10 C (14 F) to +40 (104 F)
	Temperature - Storage	-20 C (-4 F) to +50 (122 F)
	Humidity	0 to 95% relative humidity, non-condensing
•Specifications are subject to change without notification.		

LR-44 Lanyard IR Receiver Specifications

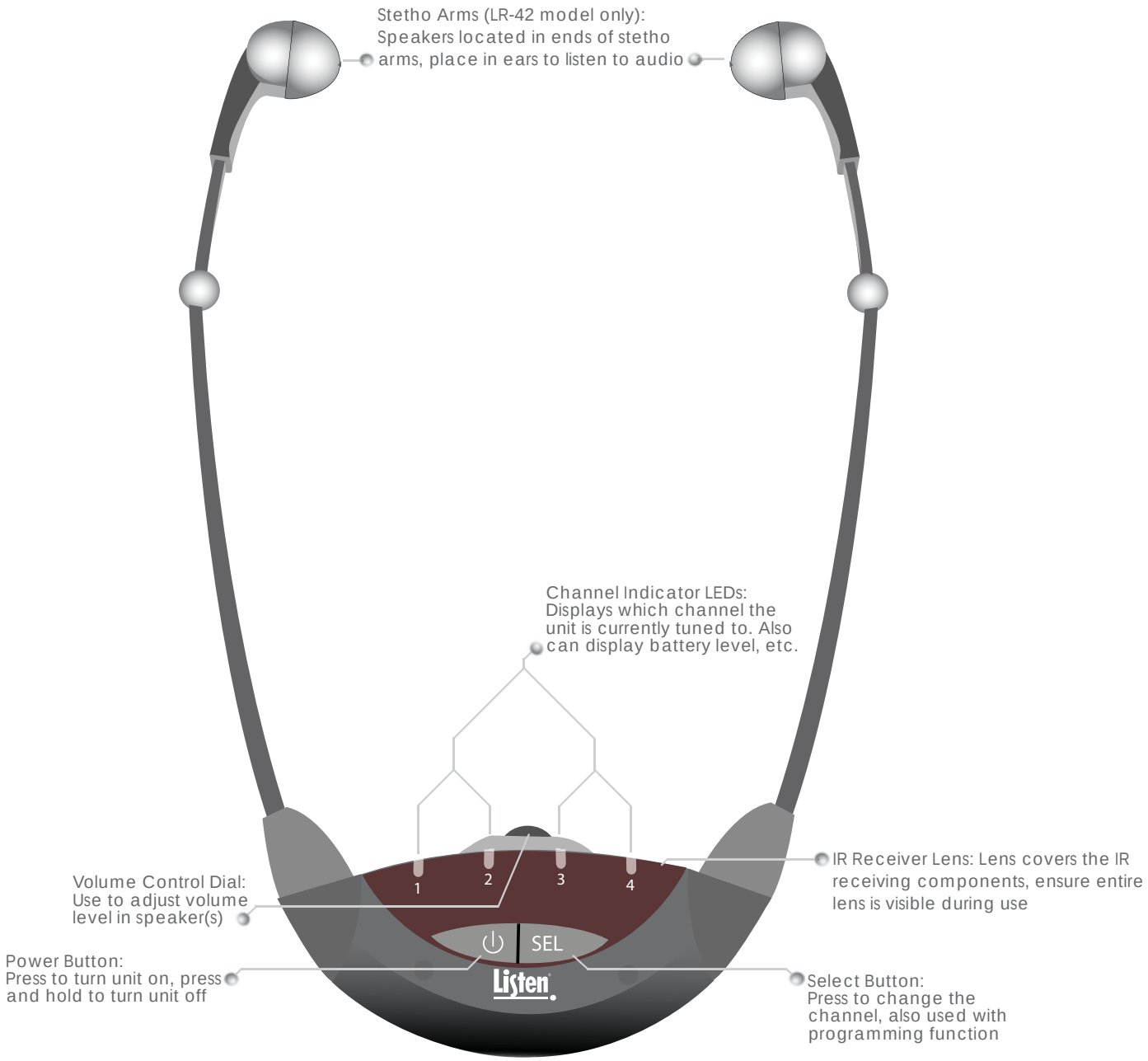
Architectural Specification

The Lanyard IR Receiver shall be capable of receiving on four carriers (2.3, 2.8, 3.3, 3.8 MHz) and the channel shall be displayed on one of four front panel LEDs. The receiver will accept mono or stereo earphones with a 3.5 mm connector. The receiver shall be capable of being locked on a channel. The receiver shall be capable of receiving a stereo signal on each of the four carriers. The receiver shall have a SNR of 60 db or greater and have built in squelch control. The device shall have an audio frequency response of 63 Hz to 15 kHz, +/- 3db and shall have distortion of less than 2%. The device shall operate for 30 hours with two AAA alkaline batteries and 15 hours with two AAA NiMH rechargeable batteries. The receiver shall be covered by a limited lifetime warranty. The LR-44 is specified.

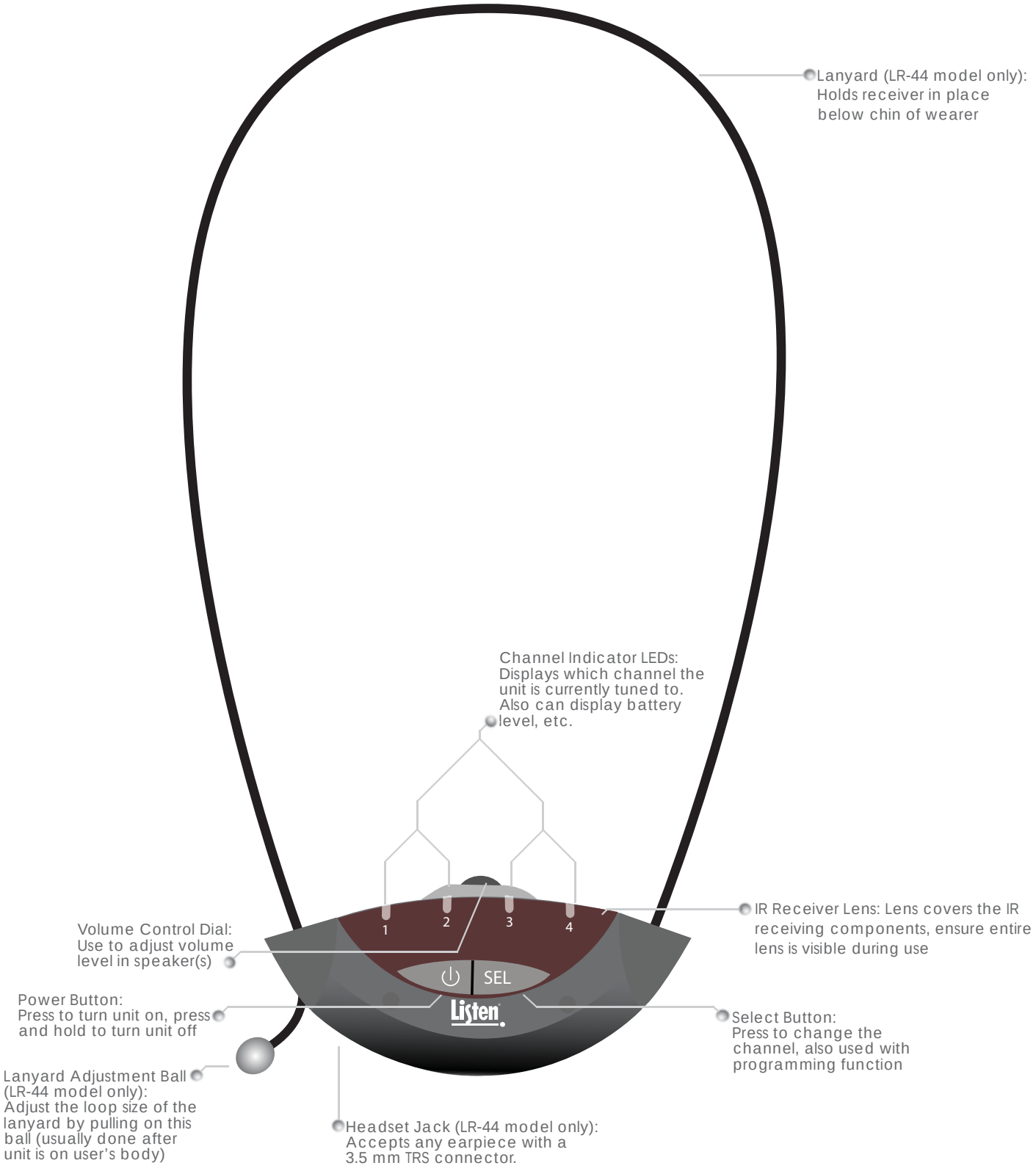
	Specifications	LR-44
RF	Carrier Frequencies	Selectable: 2.3 MHz, 2.8 MHz, 3.3 MHz, 3.8 MHz
	Number of Channels	Four (4) selectable channels
	IR Detectors	Two (2) detectors under front IR lenss
	Sensitivity	One (1) nW/cm2 at 40 db SNR
	Frequency Accuracy	+/- .005% stability 0 to 50C
	Squelch	Automatic on loss of RF signal (40 db SNR)
	Compliance	FCC Part 15, Industry Canada, CE, RoHS
Audio	** All system specifications are wireless end-to-end	
	System Frequency Response	63Hz - 15kHz (+/- 3dB)
	System Signal to Noise Ratio (A-weighted)	Mono: >60dB
		Stereo: >52dB
	System Distortion	<2% total harmonic distortion (THD)
	Audio Output Jacks	3.5 mm connector unbalanced, mono or stereo headphones
	Audio Output Power	20 mW maximum at 32 ohms
Controls	User Controls	Volume, Power, Channel Select
	Programming	Channel Lock, Auto Seek, Channel Lock-Out, Squelch
Indicators	Unit Power	Indicated by current channel selection LED
	Channel Selection	Red LED illuminates on the current channel selection
Power	Battery Type	Two (2) AAA alkaline batteries or NiMH battery pack
	Battery Life	30 hours alkaline, 15 hours NiMH rechargeable pack (LA-364)
	Battery Charging	Fully Automatic with NiMH battery pack and LA-350 charger
Physical	Dimensions (H x W x D)	1.8 x 4.0 x .75 in (46 x 102 x 19 mm)
	Color	Grey with White Silk Screening
	Unit Weight without batteries	1.75 ounces (49 grams)
	Unit Weight with batteries	2.55 ounces (74 grams)
	Shipping Weight	8 ounces (227 grams)
Environmental	Temperature - Operation	-10 C (14 F) to +40 (104 F)
	Temperature - Storage	-20 C (-4 F) to +50 (122 F)
	Humidity	0 to 95% relative humidity, non-condensing

•Specifications are subject to change without notification.

LR-42 Quick Reference


Stetho Arms (LR-42 model only):
Speakers located in ends of stetho arms, place in ears to listen to audio
Channel Indicator LEDs:
Displays which channel the unit is currently tuned to. Also can display battery level, etc.
1
2
3
4
IR Receiver Lens: Lens covers the IR receiving components, ensure entire lens is visible during use
Volume Control Dial:
Use to adjust volume level in speaker(s)
SEL
Power Button:
Press to turn unit on, press and hold to turn unit off
Select Button:
Press to change the channel, also used with programming function

LR-44 Quick Reference


Lanyard (LR-44 model only): Holds receiver in place below chin of wearer
Channel Indicator LEDs: Displays which channel the unit is currently tuned to. Also can display battery level, etc.
1
2
3
4
IR Receiver Lens: Lens covers the IR receiving components, ensure entire lens is visible during use
Volume Control Dial: Use to adjust volume level in speaker(s)
SEL
Power Button: Press to turn unit on, press and hold to turn unit off
Listen
Select Button: Press to change the channel, also used with programming function
Lanyard Adjustment Ball (LR-44 model only): Adjust the loop size of the lanyard by pulling on this ball (usually done after unit is on user's body)
Headset Jack (LR-44 model only): Accepts any earpiece with a 3.5 mm TRS connector.

LR-42/44 Setup Instructions

1 Unpack the Product

Remove outer packaging and plastic cover. Verify all components are present and that no physical damage has occurred to the product.

2 Determine Battery Type to be Used

2A Alkaline Batteries: If using alkaline batteries install them in alkaline battery compartment attached to rear of unit using the following process (purchase Listen part number LA-363).

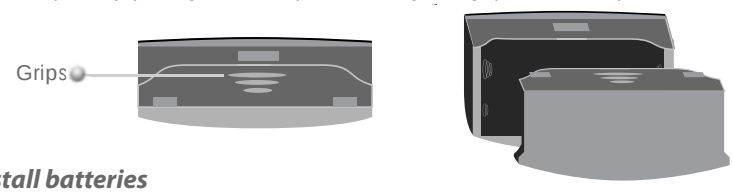
1 Remove alkaline battery compartment

Press down on compartment and push towards the bottom of unit.

CE 0682
Model: 4-Channel IR Receiver
FCC: This device complies with Part 15 of the FCC Rules.
IC: This Class A digital apparatus complies with Canadian ICES-003.
Listen Support: 1.800.330.0891
1.891.233.8992, www.ListenTech.com

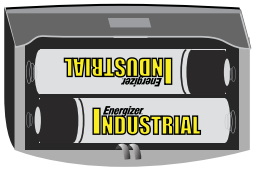
2 Open battery compartment

Open by pulling into two pieces using the grips on the top of the compartment



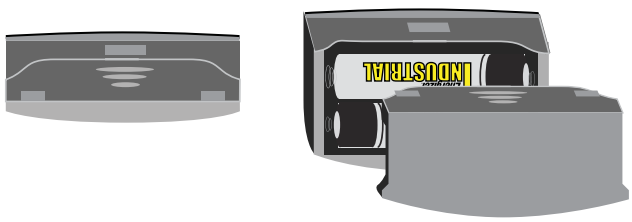
3 Install batteries

Insert two AAA alkaline batteries in compartment noting polarity.



4 Close battery compartment

Snap the two compartment pieces back together.



5 Return battery compartment to rear of receiver.

Place battery compartment on rear of receiver.

2B Rechargeable NiMH batteries: To use rechargable NiMH batteries in the receiver you will need to purchase an NiMH rechargeable battery pack; Listen part number LA-364.

IMPORTANT: Do not install AAA NiMH batteries in included alkaline battery pack because the batteries will not charge in this pack, only use a Listen provided sealed battery pack (LA-364) for battery charging.

Install LA-364 battery pack using the following process:

1 ***Remove alkaline battery compartment***

Remove alkaline battery compartment by pressing down on compartment and pushing towards the bottom of unit. Store alkaline battery pack for later use if desired.

CE 0682
Model: 4-Channel IR Receiver
FCC: This device complies with Part 15 of the FCC Rules.
IC: This Class A digital apparatus complies with Canadian ICES-003.
Listen Support: 1.800.330.0891
1.891.233.8992, www.ListenTech.com

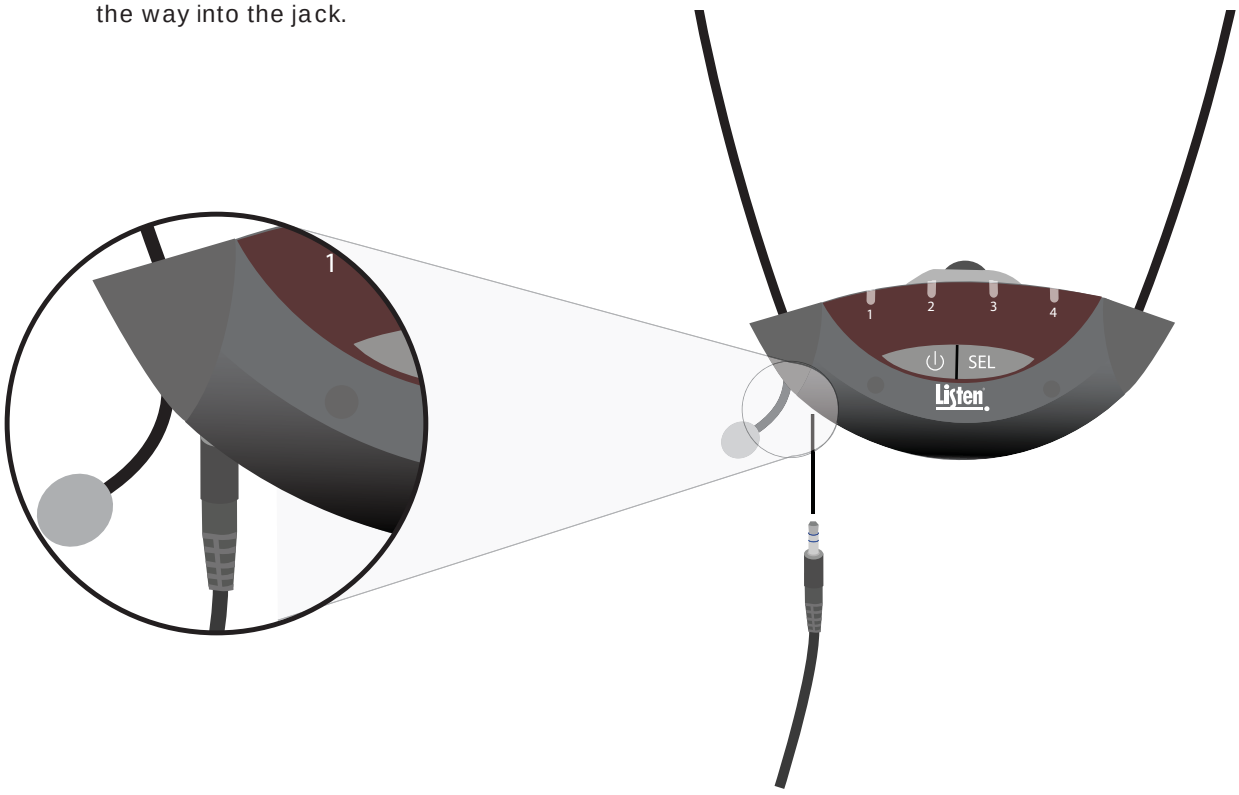
2 ***Place LA-364 battery pack in receiver***

Place LA-364 battery pack in receiver. The unit will now recognize the rechargeable batteries and charge them correctly when unit is placed in a charging case (LA-350).

CE 0682
Model: 4-Channel IR Receiver
FCC: This device complies with Part 15 of the FCC Rules.
IC: This Class A digital apparatus complies with Canadian ICES-003.
Listen Support: 1.800.330.0891
1.891.233.8992, www.ListenTech.com

3 Connect an Earphone or Headset (LR-44 model only)

An earphone or headset will connect to the jack on the bottom of the unit. Either mono or stereo connectors may be used with Listen receivers. Make sure to push the connector all the way into the jack.

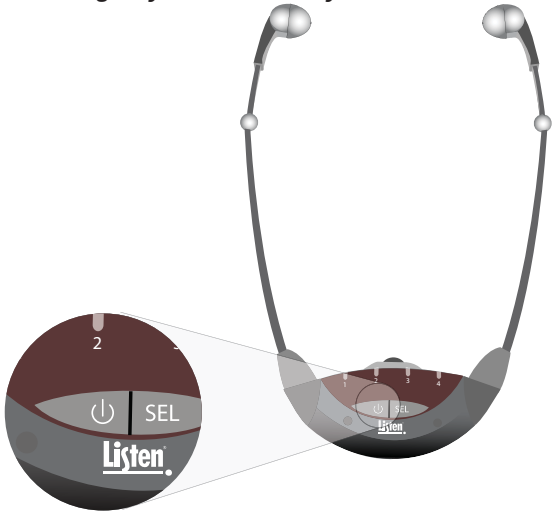


4 Turn Unit On

Turn the unit on by pressing either button on the front of the unit.

NOTE 1: The LR-44 model must have a headset connected to the unit to turn on and remain on for longer than ten seconds.

NOTE 2: If using a new LA-364 NiMH battery pack the batteries may need to be put through one charge cycle before they will turn the unit on.



5 Select a Channel and/or Program Channel Selection Method

The Select button is used to change the channel. Press the button once to change the channel. The unit will either seek or scroll through the channels depending upon which channel selection method you have enabled. See below for description of possible channel selection methods.

5A Upon Power up

When set to factory defaults the unit will turn on to the last channel is was tuned to upon power up. However, the unit can be programmed to continuously seek for a channel with signal upon power up until one is found (Auto-Seek). See page 102 for more programming information.

5B Single Channel Systems

If you know what channel the unit will be used on, and you know that there is only one channel that the unit will need to be used on, you can lock it onto that channel now. See page 101 for channel lock information.

5C Multiple Channel Systems

In systems that require the receivers to be able to access more than one channel you must decide which type of channel selection method you want enabled. The default setting is that each time you press the Select button the unit will scroll to the next channel. If you want the receiver to automatically begin seeking for another channel when the signal is lost (such as walking from room to room in a museum) the Auto-Seek function must be enabled. See page 102 for more information.

6 Select Stereo/Mono Mode

If the receiver will be receiving a mono signal (stereo mode is not enabled on LT-82) no action is required as Mono Mode is the default setting. However, if the receiver will be receiving a stereo signal the receiver must be set to Stereo Mode to function properly.

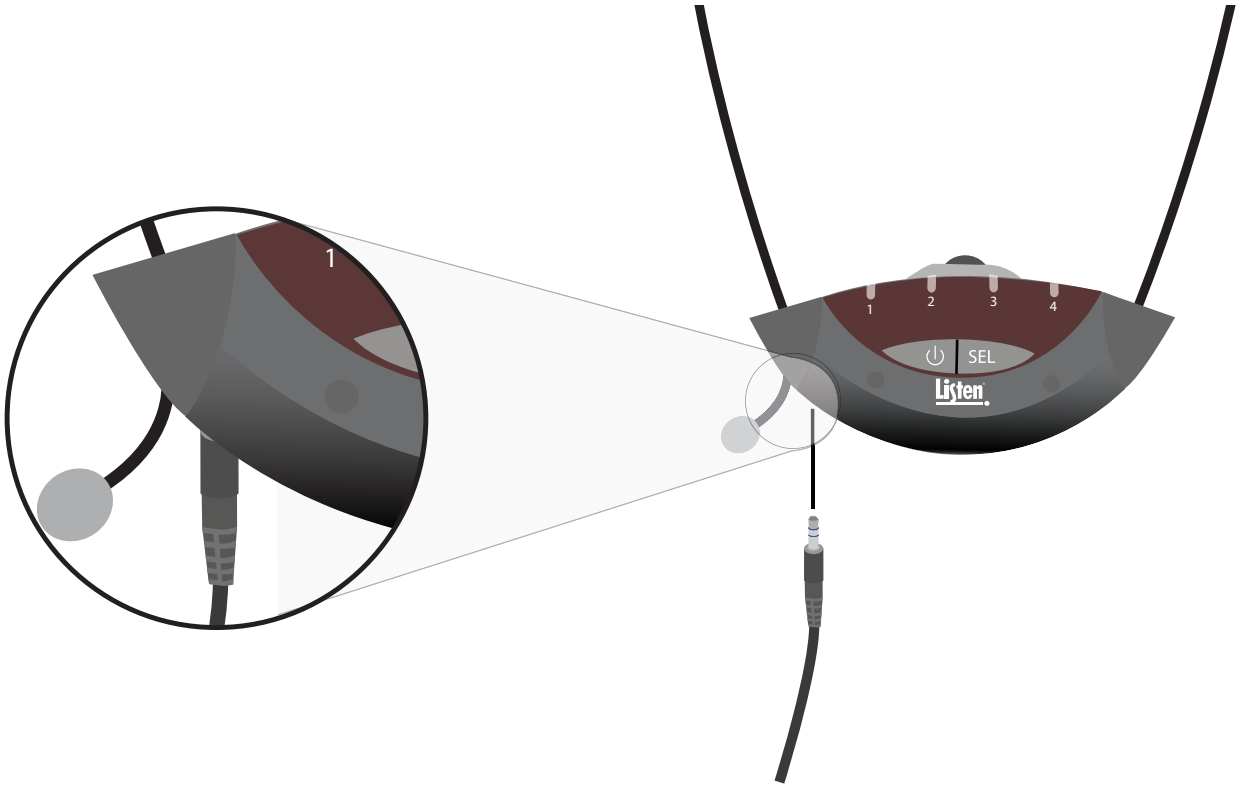
7 Setup Additional Programming (if desired)

Additional programming options, in addition to the Auto-Seek and Stereo/Mono Mode functions described above, are the Channel Lock-out and Squelch setting. See page 102 for a complete explanation of the programming functions for the receiver.

NOTE: The following operating instructions briefly describe how a unit operates based on which programming features have been enabled/disabled, with the factory default settings highlighted. See page 102 for detailed information about programming and operating units using non-default settings.

1 Connect an Earphone or Headset (LR-44 Model Only)

An earphone or headset will connect to the jack on the bottom of the unit. Either mono or stereo connectors may be used with Listen receivers. Make sure to push the connector all the way into the jack.



2 Position the Unit on User's Body

NOTE: If desired, this step can be done after turning the unit on and selecting a channel as long as the front of the receiver is not obstructed during the channel selection process.

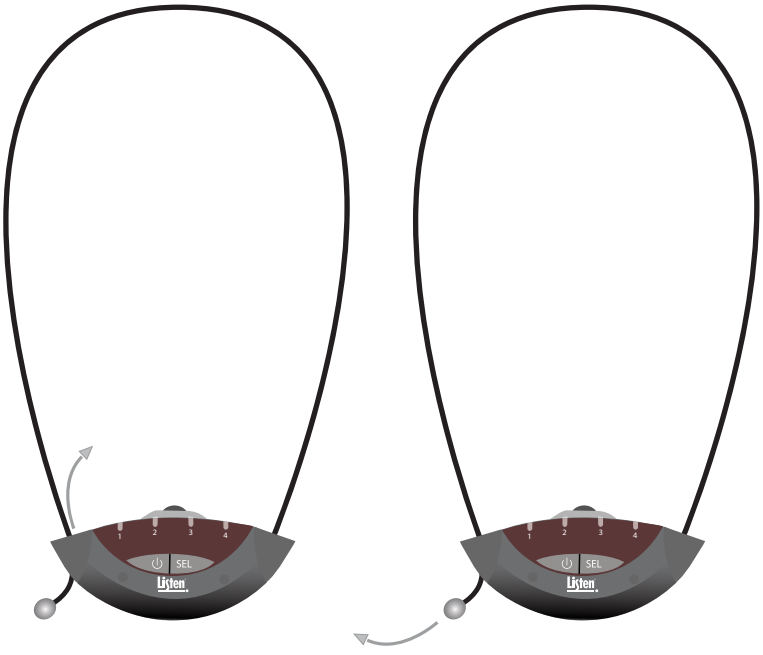
IMPORTANT: Always wear the receiver in such a way that there is nothing covering the front lens of the receiver. If the front lens is covered or obstructed the receiver will have very poor range.

2A *LR-42*

Position the receiver so the stethoscope arm tips rest in the ear holding the unit below the chin of the user.

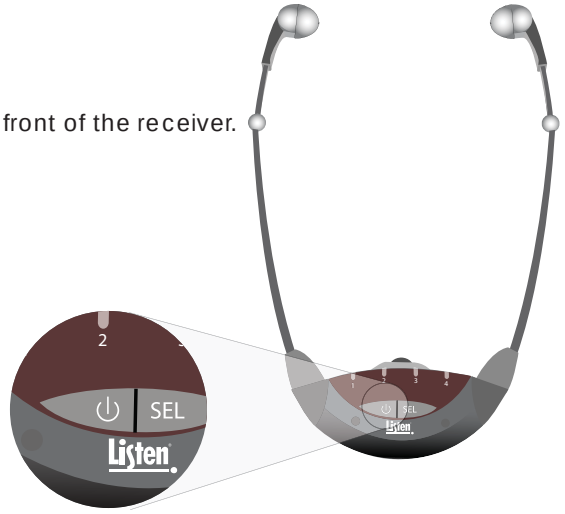
2B *LR-44*

Position the lanyard around the neck holding the unit below the chin of the user. If desired, pull on the lanyard adjustment ball to decrease the size of the lanyard loop (bringing the unit closer to the user's chin). To increase the size of the lanyard loop pull on the lanyard cord above the point it passes through the receiver.



3 Turn the Unit On

Turn on the unit by pressing either button on the front of the receiver.



NOTE: The LR-44 model must have a headset connected to the unit to turn on and remain on for longer than ten seconds.

NOTE: If using a new LA-364 NiMH battery pack the batteries may need to be put through one charge cycle before they will turn the unit on.

3A ***Auto-Seek Disabled (Default OFF)***

The unit will power up to the same channel that it was on when it was last turned off.

3B ***Auto-Seek Enabled***

The unit will power up to the same channel that it was on when it was last turned off. If no signal is present on that channel it will seek for a channel with signal present. If none is found it will continue seeking until it finds a signal. Note that if the unit has been locked on its channel this lock will override Auto-Seek

To turn the unit off press and hold the PWR button for 1.5 seconds.

4 LED Sleep Mode

The receiver will shut off the channel indicator LEDs after a period of 10 seconds passes without any buttons being pressed. The receiver will still produce audio and the volume can still be adjusted, only the LEDs shut down. It will be necessary to "wake up" the receiver by tapping either the PWR or Select button before doing many of the operating tasks described in the next sections.

5 Select Listening Channel

Selecting Channel with:

5A Auto-Seek Disabled (Default OFF)

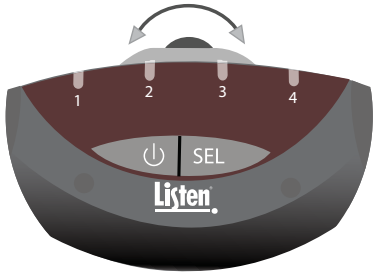
Press the Select button to scroll through the four channels. If the channel indicator LED flashes four times when Select is pressed, and the unit does not change channels, it is locked on the current channel. See page 101 for channel lock information. Also, if the unit "skips" over the desired channel it is because that channel has been locked out. See page 102 for more information about the programmable features.

5B Auto-Seek Enabled

The unit will continuously seek for a signal until one is found and then it will stay on that channel. If the signal is not detected for a short time period, or the user presses the SEL button, the unit will seek for another signal and will keep seeking until a signal is detected. If, however, the unit is locked on the current channel this lock will "override" Auto-Seek and the unit will not change channels when the signal is lost. Also, if there are channels that have been locked out in the Channel Lock Out mode the Auto-Seek will not stop on these channels. See page 102 for more information.

6 Adjust Volume Level

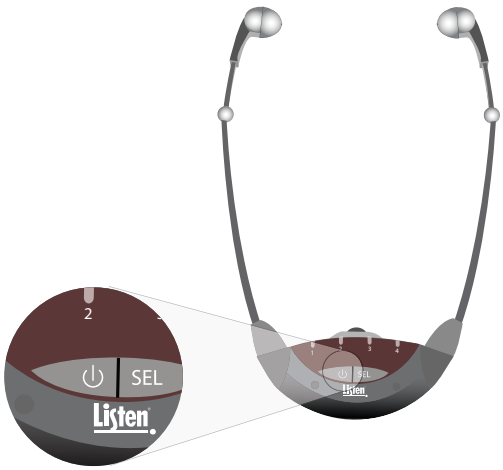
Use the control dial on the top of the unit to adjust the volume to a comfortable level.



7 Checking Battery Level and Current Channel

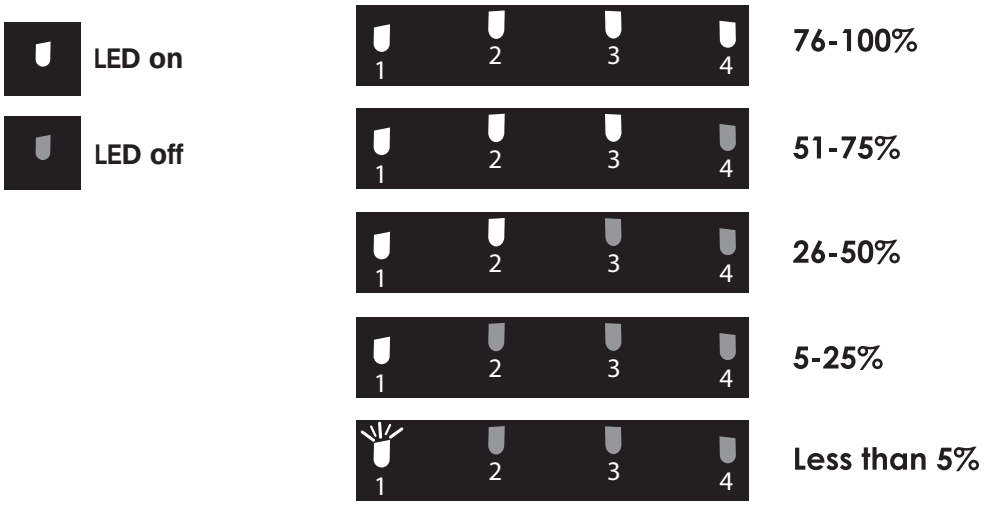
7A Checking Battery Level

1. Tapping the power button will display the battery level on the channel indicator LEDs.



2. When a battery check is initiated all four LEDs will turn on. Then the LEDs will ramp down to the current battery level. If all four LEDs turn on and remain on the batteries are full.

3. The battery level will then display on the channel indicator LEDs for two seconds (unless battery level is less than 5%, in which first LED will flash for five seconds). Each channel indicator that is shown represents 25% of battery capacity (see chart below).



7B Checking Current Channel

The channel the unit is currently on is represented by the corresponding LED in the channel indicator LEDs being lit (unless unit is in LED sleep mode). To check which channel the unit is on without changing the current channel while the unit is in LED sleep mode, press either the PWR or Select button once. This will turn the channel indicator LEDs back on for 10 seconds.

8 Auto Shut-Off Feature

The receiver will automatically turn off in the two following situations:

1 After 10 seconds

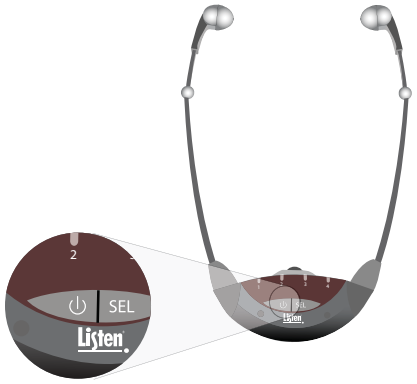
After 10 seconds if there is no headset plugged into the headset jack (LR-44 model only). This allows for a quick battery status check without having to plug in a headset. This function is also disabled while in Program Mode.

2 After 30 minutes

After 30 minutes if no signal is detected by the receiver (both models).

9 Powering down the unit

To power down the unit press and hold the PWR button for 1.5 seconds. All of the LEDs will light up momentarily and then turn off signaling power has been shut off.



LR-42/44 Locking Instructions

Locking the Receiver on One Channel

The unit can be electronically locked on one channel so that it will not change channel even if the Select button is pressed. It is recommended to lock the receivers on the channel that is being used in systems that do not require the user to change channels (single channel systems).

Channel Lock Procedure

The unit can be electronically locked on the channel it is currently on using the following process.

1. Select the channel that you want to lock the unit on.
2. Wait until the unit enters LED sleep mode. LED sleep mode begins when the unit extinguishes the channel indicator LED which will happen 10 seconds after the last button is pressed.
3. Once in LED sleep mode, press and hold both the Select and Power buttons for three seconds.
4. After holding for three seconds, the channel indicator LED will flash once indicating that the unit has been successfully locked. Once the channel indicator LED flashes you can release the Power and Select buttons.

Channel Unlock Procedure

The procedure for unlocking the unit is the same as locking the unit.

Lock Indicators

If you press the Select button to change the channel when the unit is locked; the channel indicator LED will flash four times and the unit will not change channels. Follow the lock/unlock procedure shown above to be able to change the channel.

LR-42/44 Programming Instructions

Program Mode Overview

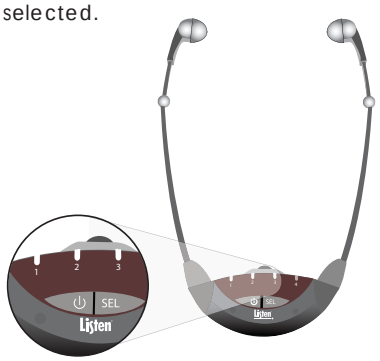
The following features can be programmed within the program mode: Stereo On/Off, Channel Lock Out, Auto Seek and Squelch. The following sections outline the procedures required to enter the program mode, modify the programmable features and exit the program mode. There are also several examples of how to use the program mode to change the settings of the receiver. Lastly, the end of this programming section provides a detailed description about each programmable feature and when they can or should be used.

Entering Program Mode

1. Make sure that the unit is off (not just in LED sleep mode).
2. Press and hold the Power and Select buttons for three seconds.
3. When program mode is entered all four LEDs will flash once indicating successful entry into program mode.
4. Immediately after the LEDs flash the channel one LED will come on. This represents the first of the programmable features, the Stereo On/Off function.

While in Program Mode

1. The Channels 1, 2 and 3 LED indicators are used to display which programmable feature is currently selected.



2. The Channel 4 LED indicator shows whether the Stereo On/Off and Auto-Seek features are enabled or disabled. If the Channel 4 LED is on these features are enabled.
3. Press the Select button to advance to the next program mode feature.
4. Press the Power button to:
   - 4A Enable or disable the Stereo On/Off and Auto-Seek Features (or),
   - 4B Enter the program “sub-mode” required to adjust the Channel Lock-Out and Squelch features.

Program Mode Functionality Diagram

Use this chart to help with navigating through, and adjusting the features within, the program mode.

	Programmable Feature	Receiver LED Display Shows	Navigating within the Program Mode	
			Pressing the Select Button	Pressing the Power Button
1	Stereo On/Off		Advances to Feature 2	Toggles Stereo On/Off. LED 4 illuminated indicates stereo is ON default : off
2	Channel Lock-Out		Advances to Feature 3	Enters Channel Lock-Out "Sub-Mode" (See next page for instructions)
3	Auto-Seek		Advances to Feature 4	Toggles Auto Seek On/Off. LED 4 illuminated indicates Auto-Seek is ON default : off
4	Squelch		Advances to Feature 5	Enters Squelch Adjustment "Sub-Mode" (See page 105)
5	No Function		Advances to Feature 6	No Function
6	Reset to Defaults		Advances to Feature 7	Unit flashes all LED's 3 times indicating reset and then the unit shuts off
7	Exit Program Mode		Returns to Feature 1	Exits Program Mode and returns to standard operating mode

Channel Lock-Out "Sub-Mode" Instructions

While in Channel Lock-Out "Sub-Mode"

1. The channels that would be available are represented by the corresponding channel indicator LED being on and the channels that would be "locked out" are represented by the channel indicator LED being off.
2. Press the Select button to advance to the next channel(s) active combination.
3. Press the Power button to save the selected channel(s) active combination, and return to regular mode (the Auto-Seek function will be the selected feature).

Channel Lock-Out "Sub-Mode" Functionality Diagram

Use this chart to help with navigating through, and adjusting the channels active, within the Channel Lock-Out "Sub-Mode".

Channels Active	Receiver LED Display Shows:	Navigating within the Channel Lock-Out "Sub-Mode"	
		Pressing the Select Button	Pressing the Power Button
1		Advances to the next channel(s) active combination	Saves the selected channel(s) active combination and returns to regular program mode
2			
1,2			
3			
1,3			
2,3			
1,2,3			
4			
1,4			
2,4			
1,2,4			
3,4			
1,3,4			
2,3,4			
1,2,3,4 (default)			

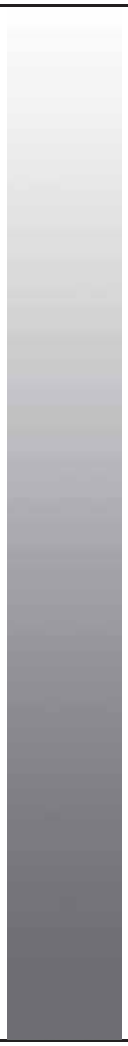
Squelch Adjustment "Sub-Mode" Instructions

While in Squelch Adjustment "Sub-Mode"

1. There are 16 available squelch settings. The 16 settings are represented by binary code (refer to the chart below).
2. Press the Select button to advance to the next possible squelch setting.
3. Press the Power button to save the selected squelch setting, and return to regular program mode.

Squelch Adjustment "Sub-Mode" Functionality Diagram

Use this chart to help with navigating through, and adjusting the channels active, within the Squelch Adjustment "Sub-Mode".

Squelch Setting	Receiver LED Display Shows:	Squelch	Navigating within the Squelch Adjustment "Sub-Mode"	
			Pressing the Select Button	Pressing the Power Button
0			Advances to the next squelch setting	Saves the selected squelch setting and returns to regular program mode
1				
2				
3 (default)				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Resetting to Defaults

1. It is possible to reset the unit to factory default settings and the unit must be in the program mode to be reset.
2. While in program mode, select the “Reset to Defaults” function and press the power button.
3. The unit will flash the channel indicator LED’s three times and then shut down when reset.

Exiting Program Mode

There are two ways to exit the program mode

1. Wait 10 seconds without pressing a button (any changes made are saved.)
2. Use the Select button to scroll through the program mode functions until the “Exit Program Mode” function is selected and then press the Power button.

Programming Examples

Example #1

I want to turn on/off the Stereo Mode function and then exit program mode

1. Enter Program Mode (see page xxx)
2. When program mode is entered the first function is active and the LED's will show

Using the functionality chart on a previous page note that this is the Stereo On/Off Function.

3. Note that the channel 4 LED indicates whether or not this function is on/off.
4. Press the power button to turn Stereo Mode on/off.
5. Exit Program Mode.

Example #2

I want to turn on/off the Stereo Mode function and the Auto-Seek Function and then exit program mode.

1. Enter Program Mode
2. When program mode is entered the first function is active and the LED's will show

Using the functionality chart on a previous page note that this is the Stereo On/Off Function.

3. Note that the channel 4 LED indicator represents whether or not this function is on/off.
4. Press the power button to turn Stereo Mode on/off.
5. Press the Select button two times until the LED's show

Using the chart on a previous page note that this is the Auto-Seek Function.

6. Again, note that the channel 4 LED indicates whether this function is on/off.
7. Press the power button to turn Auto-Seek on/off.
8. Exit Program Mode.

Example #3

I want to lock-out channels 2 and 3 using the Channel Lock-Out Function.

1. Enter Program Mode.
2. When program mode is entered the first function is active and the LED's will show

Using the functionality chart on a previous page note that this is the Stereo On/Off Function.

3. Press the Select button once so the LED's show

Note that this is the Channel Lock-Out function.

4. Press the Power button to enter the Channel Lock-Out "Sub-Mode".
5. Upon entry to the Channel Lock-Out "Sub-Mode" the LED's will show which channels are currently active (if the unit is at default settings all four LED's will be on indicating that all channels are active).
6. Press the Select button to scroll through the 15 possible combinations of active/locked out channels until the unit displays.

7. Press the Power button to save this setting and return to regular program mode.
8. Exit Program Mode.

Example #4

I want to reset the unit to factory defaults.

1. Enter Program Mode.
2. When program mode is entered the first function is active and the LED's will show

Using the functionality chart on a previous page note that this is the Stereo On/Off Function.

3. Press the Select Button five times until the unit displays

4. Press the Power Button to reset the unit.
5. The unit will flash the four LED's three times and then shut down. It will be necessary to manually turn the unit back on after a reset.

Example #5

I want to tighten the squelch setting to setting 10.

1. Enter Program Mode.
2. When program mode is entered the first function is active and the LED's will show

Using the functionality chart on a previous page note that this is the Stereo On/Off Function.

3. Press the Select button three times so the LED's show

Note that this is the Squelch Adjustment Function.

4. Press the Power button to enter the Squelch Adjustment "Sub-Mode".
5. Upon entry to the Squelch Adjustment "Sub-Mode" the LED's will show which squelch setting is currently selected (if the unit is at default settings the unit will display representing a squelch setting five).

6. Press the Select button to scroll through the 16 squelch settings until the unit displays.

7. Press the Power button to save this setting and return to regular program mode.
8. Exit Program Mode

Stereo Mode (Default is OFF)

Stereo Mode Function

This function must be set to match the type of signal that the receiver is receiving. If the receiver is receiving a mono signal this function must be OFF. If the receiver is receiving a stereo signal this function must be ON.

When to enable Stereo Mode

Stereo Mode must be enabled if the receiver is receiving a stereo signal from the transmitter.

Channel Lock-Out (Default is All Channels Available)

Channel Lock Out function

This function is used to lock out channels from being accessible to the user when the Select button is pressed or when the unit is seeking for a channel in Auto-Seek Mode. This function is different from the Channel Lock function in that this function removes channels from being selectable whereas the Channel Lock function holds the unit on the current channel. By using this program mode you can lock out any combination of channels.

When to Lock Out Channels

If you have Auto-Seek disabled (default setting) the unit scrolls to the next channel with each press of the Select button. If, for example, you have a two channel system you can use this feature to “lock out” the other two unused channels so that the user will not have to scroll through them to get to the channels with a signal. If you have Auto-Seek enabled and are using less than four channels, you can use the Channel Lock-Out mode to ensure the receiver will not stop on a channel without a signal. If, for example, you are using Auto-Seek Mode and have two channels active (channels one and four) and find that often times when the unit seeks for channel four is stops on channel three, you would use the Channel Lock-Out Mode to eliminate the problem.

Auto-Seek (Default is Off)

Auto-Seek function

Upon power-up with the Auto-Seek feature enabled the unit will search for a channel with a signal present. If a signal is found the unit will stop and stay on that channel. If the unit does not find a signal it will continue to seek until one is found. If the unit is on a channel with a signal it will remain on that channel until the signal is not detected for a short time at which point it will automatically seek for another channel with signal. If the Select button is pressed when the unit is on a channel it will seek for the next channel with a signal.

When to Enable Auto-Seek

It is recommended to enable the Auto-Seek feature in applications where a user will be moving from one area to another and does not want to have to manually change the channel on the receiver in each new area. Also if it is desired that the Select button act as a “seek” button instead of a manual scroll to the next channel button, Auto-Seek should be enabled.

Priority

If the receiver has been locked on a channel the lock will take priority over Auto-Seek.

Squelch Setting (Default is 3)

Squelch Setting

The purpose of squelch is to mute the audio output of the receiver when the signal from the radiator(s) is turned off or is too weak to be received. Without squelch you would hear radio noise in your earphone. The squelch on your receiver can be adjusted so that it will mute at varying levels of signal strength. There are 16 settings that the squelch setting can be set to. The lowest squelch setting (no squelch) is “0” and the tightest squelch setting is “15.” The default setting is “3.”

When to Adjust Squelch Setting

For maximum range the squelch setting should be set to a low level (0, 1 or 2). However when setting the squelch level low the reliability of the squelch setting is compromised and will lead to radio noise being heard in the earphone when signal strength is low. If no radio noise is desired to be heard the squelch setting should be set to a tighter position. However when setting the squelch level high the receiver will have reduced range due to the audio being cut-off when signal is low. See “Programming Unit” section for instructions on how to adjust squelch setting.

LR-42/44 Battery Charging Information

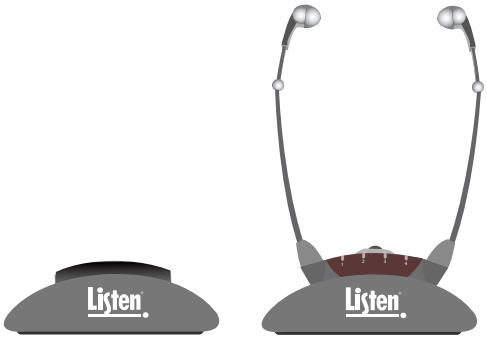
1 Requirements

1A NiMH Battery Pack (LA-364)

It is not possible to charge batteries in the alkaline battery pack that comes with the unit. The LA-364 NiMH rechargeable battery pack must be used.

1B IR 8-Unit Charging/Storage Station

The only way to charge the LA-364 battery packs is by inserting them into the LA-350 Charging Station. The battery packs can be charged while installed on the receiver or they can be charged while separate from the receiver.



2 How to Charge Batteries

There are two ways to charge the LA-364 Rechargeable NiMH Battery Packs: within the receiver and separate from the receiver. Within the receiver is the easiest method however charging the battery packs while they are separate from the receiver allows for the receiver to be used continuously while another set of batteries are being charged for it.

2A Charging Batteries within the Receiver

1 Install LA-364 rechargeable NiMH Battery Pack

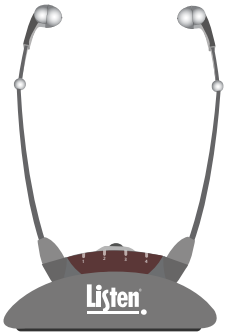
Install LA-364 rechargeable NiMH Battery Pack to rear of receiver.

CE 0682
Model: 4-Channel IR Receiver
FCC: This device complies with Part 15 of the FCC Rules.
IC: This Class A digital apparatus complies with Canadian ICES-003.
Listen Support: 1.800.330.0891
1.891.233.8992, www.ListenTech.com

LR-42/44 Battery Charging Information

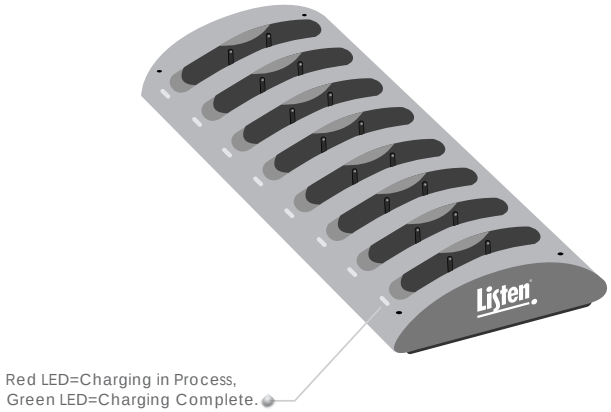
2 Place LR-42/LR-44 Receiver into a slot

Place LR-42/LR-44 Receiver into a slot on the LA-350 case. Ensure that the LA-350 charging station has power to it.



3 When the unit is seated correctly a red LED will light

When the unit is seated correctly a red LED will light up on the LA-350 charging station adjacent to the charging slot indicating charging has begun.



4 When the receiver is fully charged the green LED will light

When the receiver is fully charged the red LED will turn off and a green LED will light up to indicate unit is fully charged. The green LED will stay lit until unit is removed from the charging station.

IMPORTANT: When not using your LR-42/LR-44 Receiver it is recommended to keep the receiver on the charging station. The charging station provides a maintenance charge that will keep the battery level at 100%. If the receiver is not kept on the charger it can lose 20% of its charge per month.

LR-42/44 Battery Charging Information

2A Charging LA-364 Battery Pack Separate from the Receiver

1 Install Battery Pack Conversion Plates to charging tray

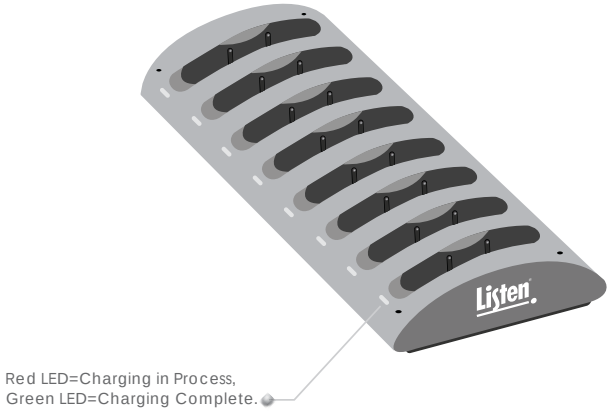
Install Battery Pack Conversion Plate to charging tray of LA-350 (conversion plates included with LA-350).

2 Place LA-364 battery pack into converted tray

Place LA-364 battery pack into converted tray of LA-350. Ensure that the LA-350 charging station has power to it.

3 When the battery pack is seated correctly a red LED will light

When the battery pack is seated correctly a red LED will light up on the LA-350 charging station adjacent to the charging slot indicating charging has begun.



4 ***When the battery pack is fully charged the red LED will turn off***

When the battery pack is fully charged the red LED will turn off and a green LED will light up to indicate battery pack is fully charged. The green LED will stay lit until the battery pack is removed from the charging station.

IMPORTANT: When not using your LR-42/LR-44 Receiver it is recommended to keep the receiver on the charging station. The charging station provides a maintanence charge that will keep the battery level at 100%. If the receiver is not kept on the charger it can lose 20% of its charge per month.

Accessories for LR-42/44

Accessories

LA-152
IR Alkaline battery compartment
included with receiver

LA-364
NIMH Rechargeable Battery Pack
requires LA-350 Charging Station

LA-150
Replacement Lanyard for LR-44

LA-350
8-Unit IR Receiver
Charging/Storage Station
LA-364 required

LA-351
8-Unit IR Receiver Storage Station

LA-161
Single Ear Bud

LA-151
Replacement Ear Tips
(Pkg. of 20)

LA-162
Stereo Ear Bud

LA-164
Earspeaker

LA-165
Stereo Headphones

LA-166
Neck Loop

LA-170
Behind-the-Head Headphones

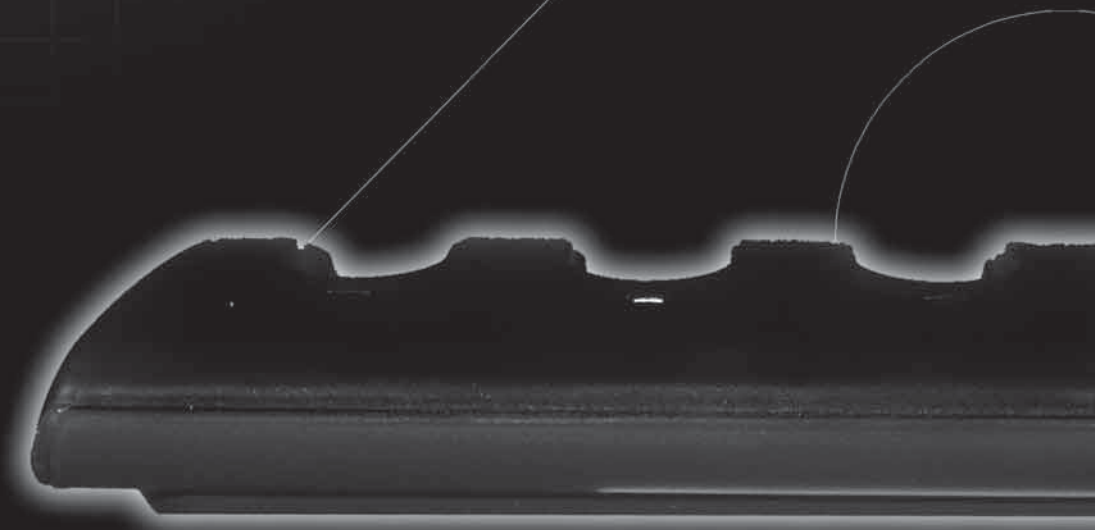
LBB 3441/10
Bosch Under-the-Chin
Stereo Headphones

LBB 3441/00
Bosch Stereo Headphones

Notes

stationary IR•

2.3 2.8 3.3 3.8



LA-350 8-Unit IR Receiver Charging/Storage Station
LA-351 8-Unit IR Receiver Storage Station

Listen®

www.listentech.com

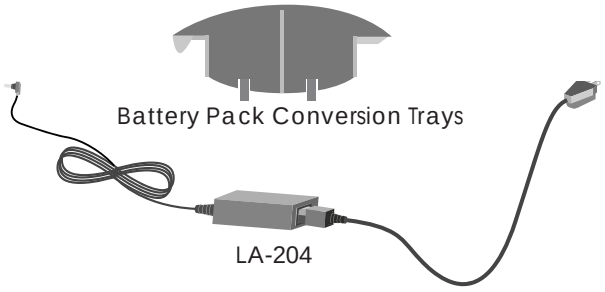
INFRARED TECHNOLOGY

LA-350/351 User's Manual Table of Contents

LA-350 Specifications and Features	119
LA-351 Specifications and Features	120
LA-350 Charging Requirements/Instructions	121
Cord Tidy Rack	124

LA-350 Package Contents

- LA-350 Charging/Storage Station
- LA-204 Power Supply
- Battery Pack Conversion Trays (8)
- Cord Tidy Rack
- LA-350 Quick Reference Card



LA-351 Package Contents

- LA-351 Storage Station
- Cord Tidy Rack

Listen Configurations

- LA-350-01 (North America)
- LA-350-02 (UK)
- LA-350-03 (Euro)

LA-350 Specifications

Features

- Can charge or store up to eight LR-42 and/or LR-44 receivers at one time.
- Easy to identify charging: Green LED=fully charged units, Red LED=charging in progress
- Pockets grab and hold receivers so they will not fall out.
- Charging/Storage Station can be mounted on a flat surface or on a wall.
- Can charge battery packs while they are attached to the receiver or while they are separate from the receiver (by use of included conversion tray).
- Lanyard cords are stored without tangling with use of Cord Tidy Rack.

	Specifications	LA-350
Compliance	RF, Safety Compliance	FCC, Industry Canada, CE, RoHS
Controls	User Controls	None
Indicators	Bicolor LED	Red when charging, Green when charging is complete
Power Supply	Type	In-line switching mode power supply, Listen part number LA-204
	Input	100-240 VAC, 47-63 Hz
	Output	7.5 VDC, 4 A
	Power Line Cord	North America, Type B, (LA-350-01)
		Asia, UK, Type G, (LA-350-02)
		Euro type J, (LA-350-03)
	Output Connector	5.0mm x 2.1mm Barrel
	Compliance	UL, CE Listed
Physical	Dimensions (H x W x D)	1.5 x 13.6 x 5.4 in (3.8 x 34.5 x 13.7 cm)
	Color	Grey with White Silk Screening
	Unit Weight	1.2 lbs (0.45 kg)
	Shipping Weight	3.0 lbs (1.3 kg)
	Mounting Options	Desk or wall mount
Environmental	Temperature - Storage	-20 C (-4 F) to +50 (122 F)
	Temperature - Operation	-10 C (14 F) to +40 (104 F)
	Humidity	0 to 95% relative humidity, non-condensing
•Specifications are subject to change without notification.		

LA-351 Specifications

Features

- Can store up to eight LR-42 and/or LR-44 receivers at one time.
- Pockets grab and hold receivers so they will not fall out.
- Storage Station can be mounted on a flat surface or on a wall.
- Lanyard cords are stored without tangling with use of Cord Tidy Rack.

	Specifications	LA-351
Compliance	Safety Compliance	FCC, Industry Canada, CE, RoHS
Controls	User Controls	None
Power	Electrical	None
Physical	Dimensions (H x W x D)	1.5 x 13.6 x 5.4 in (3.8 x 34.5 x 13.7 cm)
	Color	Dark Grey with White Silk Screening
	Unit Weight	0.9 lbs (0.4 kg)
	Shipping Weight	2.6 lbs (1.1 kg)
	Mounting Options	Desk or wall mount
Environmental	Temperature - Storage	20 C (-4 F) to +50 (122 F)
	Humidity	0 to 95% relative humidity, non-condensing
•Specifications are subject to change without notification.		

LA-350 Charging Requirements/Instructions

Requirements to Charge Receivers

1 Requirements to Charge Receivers

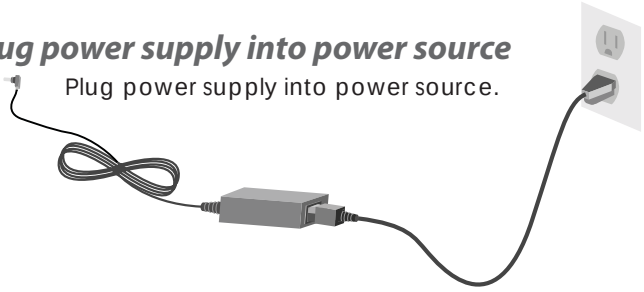
To charge Listen LA-42 or LR-44 IR Receiver batteries you must have an LA-364 Rechargeable Battery Pack for each receiver. The LA-350 will not charge AAA NiMH batteries placed inside the alkaline battery pack that comes with the receiver. The LA-364 battery packs can be charged while attached to the receiver or they can be charged separate from the receiver.

CE 0682
Model: 4-Channel IR Receiver
FCC: This device complies with Part 15 of the FCC Rules.
IC: This Class A digital apparatus complies with Canadian ICES-003.
Listen Support: 1.800.330.0891
1.891.233.8992, www.ListenTech.com

Charging Instructions

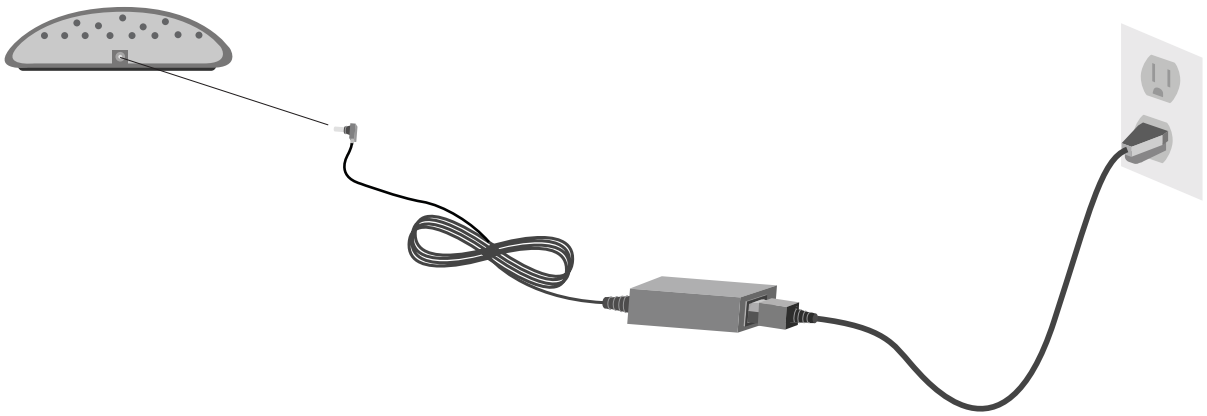
1 Plug power supply into power source

Plug power supply into power source.



2 Plug power into charging/storage station

Plug power into charging/storage station.

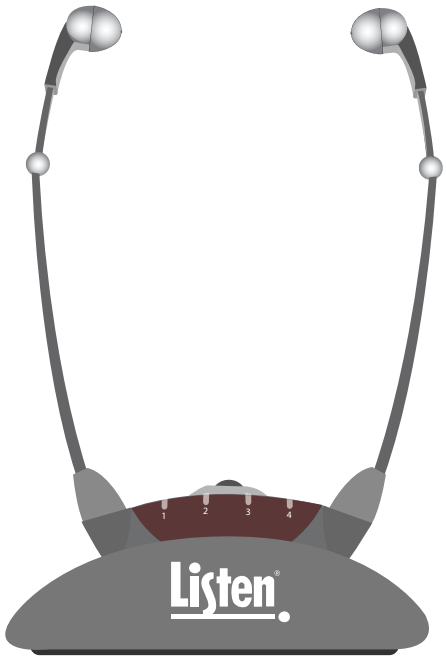


3 Charging Scheme

3A To Charge Batteries while in Receivers

1 Place receivers in charging slots

Place receivers in charging slots. It may be necessary to press down on the units to ensure that they are touching the charging contacts.



3B To Charge Batteries separate from Receivers

1 Install conversion tray

Install conversion tray in slots.

LA-350 Charging Requirements/Instructions

2 *Place LA-364 battery packs in converted charging slots*

Place LA-364 battery packs in converted charging slots.

4 *Verify batteries are charging*

Verify batteries are charging. When units begin to charge a red LED will come on near the charging slot. This LED will stay lit until the receivers are fully charged.

5 *Verify full charge*

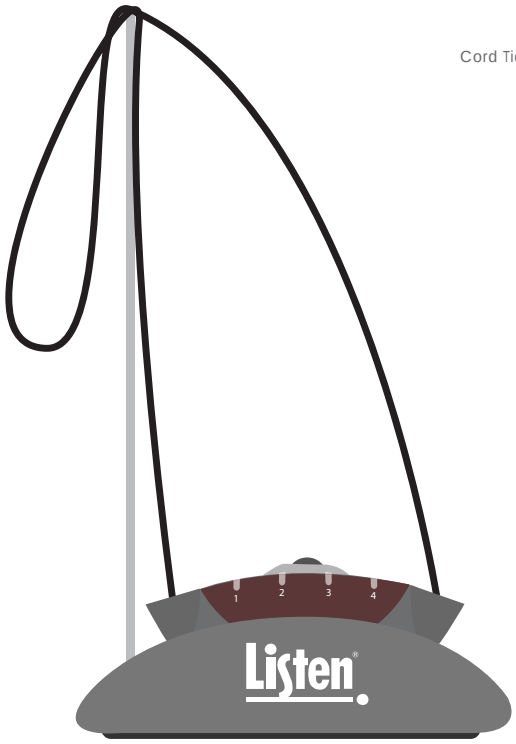
Verify full charge. When the units are fully charged a green LED will come on near the charging slot.

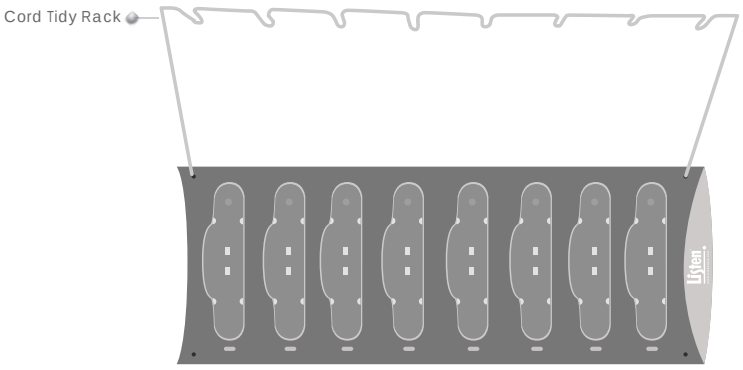
Red LED=Charging in Process, Green LED=Charging Complete.

LA-350/351 Cord Tidy Rack

The Cord Tidy Rack

The Cord Tidy Rack can be used, if desired, to help with organizing the lanyard cords of the LR-44 receiver during charging or storage. Insert the tidy rack into the holes on top of the station to use.





Notes

Notes

stationary IR•

2.3 2.8 3.3 3.8

SUPPLEMENTARY INFORMATION

Listen®

www.listentech.com

INFRARED TECHNOLOGY

Supplementary Information Table of Contents

Troubleshooting	133
Frequently Asked Questions	135
Compliance Information	137
Warranty	137
Contacting Listen	137

Troubleshooting

I believe my radiator has power but none of the LEDs on the front are on.

SW1 has been turned OFF. Turn this switch to the ON position for verification of power and carrier.

My radiator is not radiating a signal.

If there is no audio at the transmitter for 30 minutes, the radiator(s) will stop radiating to conserve the life of the radiator diodes. When the audio returns, the radiators will return to normal operation.

There is not sufficient range in my system.

It may be necessary to add additional radiators to increase the coverage area. Keep in mind that one channel on one radiator will cover up to 10,000 square feet and that this is cut in half for every additional channel used.

There is interference in my transmission.

In a multi-channel system, make sure that the transmitters are on different channels. Also, windows and sunlight can cause interference and noise on the receiver.

The audio "drops out" in areas I don't believe it should.

Audio "drop outs" can occur for several reasons, including the following: The system was set up by trial and error. With degradation of the IR diodes, the system now has dropouts due to this reduction in IR output power from the radiator. Make sure to always design the system using the footprint specifications found in the design guide. Also, in a multi-radiator application, the delay switch settings may be incorrect. The radiators could be out of phase and therefore canceling each other out. Make sure to set up the delay compensation switch correctly, refer to page 16 for further information.

The audio sounds distorted in my receivers.

The receiver may be approaching the edge of the coverage pattern where the distortion and noise can be higher. Also, if the receiver is within 10 feet of the radiator it can cause the receiver to be saturated with IR. It is a good idea to have a minimum distance of 10 feet from any radiator.

I turn up the volume wheel all the way on my receiver but the audio level is still too low.

Make sure that the Input level and Transmit Level is adjusted appropriately on the transmitter. Low batteries in the receiver will also cause low output volume.

There is a tone in the audio.

Make sure the test tone button on the transmitter is OFF. Also, make sure that two transmitters are not on the same channel in a multi-channel system.

I cannot change the channel on my receiver.

If when you attempt to change the channel, the channel indicator LED only flashes but does not change channel, the receiver is locked on the current channel. See page 101 for information on unlocking the unit.

Troubleshooting

I cannot get my receiver to scroll to the channel I want to use.

There are two reasons why the receiver would not scroll to the channel you want the unit to be on. The first is that the unit is in "Auto-Seek" mode and is not finding a signal on the channel you are trying to tune the unit to. See page 102 for more information about Auto-Seek mode. The second is that the unit is programmed to not tune to the channel you are trying to tune it to. Refer to page 102 for more information about channel programming.

The batteries are not charging in my receivers.

Make sure that you have an LA-364 NiMH battery pack installed on the receiver and that the charger is plugged in.

Frequently Asked Questions

Q How many radiators can an LT-82 power?

A Up to two radiators can be powered using an LT-82. You must use an external power supply (LA-205) for more radiators.

Q How many radiators can an LA-205 power?

A Up to two radiators can be powered using an LA-205 external power supply.

Q What do the LEDs on the front of my radiator tell me?

A Refer to page 57 for detailed information about the LED indicators on the front of the LA-140 Radiator.

Q Can I turn off the LEDs on the front of my radiator and still have it function normally.

A Yes, you can disable the LED indicators if you desire to do so. Turn SW1 on the rear of the radiator to the OFF position. See page 56 for more information.

Q What is the life-span of the Listen LA-140 Radiator?

A The radiators will be degraded to 50% efficiency at approximately 10,000 operating hours. The footprint specification provided by Listen has accounted for 40% of this degradation which occurs at approximately 8,000 hours. This is equivalent to three years of operating at eight hours per day.

Q If one of the LEDs on a radiator fails, how many LEDs will stop working?

A If a diode goes out, the radiator has been designed to minimize the impact on the rest of the LEDs. Worse case, 12 diodes out of 84 stop working.

Q If I want to mount two radiators side by side can I do this and what part to I need to order?

A Yes this is possible and often times it is recommended. You will need to order Listen part number LA-342. See page 77 for more information about the dual mounting bracket.

Q I am using Non-Listen receivers with Listen LT-82 Transmitters,how do I know which channel to use?

A Please see the LT-82 specifications page to determine the operating frequencies on page 35.

Q I am using a non-Listen transmitter with a Listen LA-140 radiator, what do I need to know?

A It is important that SW2 on the rear of the radiator is switched to “compatibility mode.” This will allow the radiator to work with other manufacturers transmitters. See page 57 for more information.

Frequently Asked Questions

Q I want to occasionally turn off one or more channels in a multi-channel system but I don't want to have to rewire the system every time I do this. Is this possible?

A Yes. The transmitter should be placed on channel "--". This does not add a channel to the system in your daisy-chain, however allows other channels to pass through. See page 40 for more information.

Q Can I make my receiver change channels automatically if I enter a room with a signal present on a different channel?

A Yes. In Auto-Seek Mode the receiver will automatically find an active channel. If the unit squelches or the select button is pressed, the unit will automatically search for an active channel. Refer to page 102 for more information about Auto-Seek Mode.

Q How do I check the battery level on my receivers?

A When the unit is on, press the power button momentarily. The LEDs will display the battery status for three seconds (4 LEDs: 75-100%, etc.). See page 99 for more information.

Q How do I adjust the squelch setting on my receiver?

A See page 106 for detailed instructions on adjusting the squelch setting.

Q How can I tell if the receiver has been fully charged when using the LA-350?

A The green LED to the side of charging pocket will illuminate.

Q Can I use rechargeable batteries in the alkaline battery compartment?

A No. You must purchase a Listen LA-364 NiMH battery pack if you want to use a charging case.

Q My rechargeable batteries don't last very long. Why?

A If your batteries have been through many charging cycles they may need to be replaced.

Compliance, Warranty and Contact Information

Compliance Information

The following compliance information applies to the LT-82, LA-140-GY, LA-140-WH, LR-42, LR-44 and LA-350.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003.

These devices are RoHS compliant.

CE

Warranty

Listen Technologies Corporation (Listen) warrants its transmitters and receivers (LT-82, LT-700, LT-800, LR-100, LR-42, LR-44, LR-300, LR-400, LR-500, LR-600) to be free from defects in workmanship and material under normal use and conditions for the useful lifetime of the product from date of purchase.

Listen warrants its Stationary IR Radiators (LA-140) to be free from defects in workmanship and material under normal use and conditions for three years from the date of purchase.

Listen warrants its Noise Canceling Microphone (LA-270) to be free from defects in workmanship and material under normal use and conditions for one year from date of purchase.

All other products and accessories are warranted for 90 days from date of purchase.

This warranty is only available to the original end purchaser of the product and cannot be transferred. Warranty is only valid if warranty card has been returned within 90 days of purchase. This warranty is void if damage occurred because of misuse or if the product has been repaired or modified by anyone other than a factory authorized service technician. Warranty does not cover normal wear and tear on the product or any other physical damage unless the damage was the result of a manufacturing defect. Listen is not liable for consequential damages due to any failure of equipment to perform as intended. Listen shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it. Listen specifically disclaims and negates any warranty of merchantability or fitness of use of such equipment including, without limitation, any warranty that the use of such equipment for any purpose will comply with applicable laws and regulations. The terms of the warranty are governed by the laws of the state of Utah.

In the first ninety days after purchase, any defective product will be replaced with a new unit. After 90 days, Listen will, at its own discretion either repair or replace transmitters and receivers with a new unit or a unit of similar type and condition. Product that is not covered under warranty shall be repaired or replaced with a unit of similar type and condition based on a flat fee. Contact Listen for details.

This limited warranty, prices and the specifications of products are subject to change without notice.

Contacting Listen

If technical service is needed, please contact Listen. Pre-authorization is required before returning Listen products. If products were damaged in shipment, please contact the carrier, then contact Listen for replacement or repair requirements payable by the carrier.

Listen's corporate headquarters are located in Salt Lake City, Utah U.S.A. and are open Monday through Friday, 8am to 5pm Mountain Time.

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